PROGRESS REPORT FOR ARMY FUNDED ACTIVITIES AT ROCKY MOUNTAIN ARSENAL NATIONAL WILDLIFE REFUGE

Commerce City, Colorado

Fiscal Year 2011

U.S. Department of the Interior
U.S. Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

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Introduction

The Rocky Mountain Arsenal (RMA) was established by the U.S. Army in 1942 as a chemical and incendiary weapons manufacturing facility in support of U.S. military efforts during World War II. Following the war, the Army leased some facilities to the Shell Chemical Company for production of pesticides and other chemicals. Weapons production ended in 1969, but the Army continued to use RMA for demilitarization of chemical munitions and other defense uses until 1984. Pesticide production by Shell Chemical Company ceased at the Arsenal in 1982.

During the military/industrial production years, waste handling practices resulted in contamination of soils, structures and groundwater at the site. RMA was added to the National Priorities List (Superfund) in 1987. In 1992, Congress passed the Rocky Mountain Arsenal National Wildlife Refuge Act of 1992 (P. L. 102-402), designating the future use of the site as a National Wildlife Refuge (NWR), mandating the Fish and Wildlife Service (Service) manage RMA "as if it were" a unit of the National Wildlife Refuge System (NWRS) during the environmental cleanup. All RMA lands were brought into the Refuge System under a "secondary jurisdiction/overlay" Memorandum of Understanding in 1993.

The Record of Decision (ROD) for the On-Post Operable Unit of RMA was signed in 1996. Shortly thereafter, the Service joined the Army and Shell in forming the Remediation Venture Office (RVO), a unique partnership with the dual missions of implementing a safe, cost effective cleanup of RMA and converting the site to its current status as a National Wildlife Refuge.

Just 10 miles from downtown Denver, Colorado, within a rapidly developing urban interface in Commerce City, Adams County; Rocky Mountain Arsenal National Wildlife Refuge (RMANWR) is the largest wildlife habitat area in metropolitan Denver at about 15,000 acres (Army maintains jurisdiction over about 1,000 acres). Located in the heart of Region 6's largest urban area, and with more Americans living within a 1-hour drive than live in all of North and South Dakota, Wyoming, and Montana combined, RMANWR provides an outstanding opportunity for the Refuge System to expose the public, particularly urban youth, to the values that wildlife and refuges provide to our society.

Refuge wildlife resources include a significant wintering population of bald eagles (*Haliaeetus leucocephalus*), one of the largest breeding burrowing owl (*Athene cunicularia*) populations in Colorado, and a myriad of other migratory birds and resident wildlife. RMANWR is becoming well known for its herd of American bison (*Bison bison*), currently over 70 animals, which were introduced in 2006. Due to past land uses, including agricultural conversion, military/industrial use, and the cleanup of these sites, most native habitats were destroyed or degraded. An established weed seed bank has made management of invasive species a priority at the refuge. Habitat management is currently focused on restoring native short grass and midgrass (mixed grass) prairie plant communities (approximately 10,100 ac.) and emulating natural ecological processes.

The Cooperative Agreement for Conservation and Management of Fish and Wildlife Resources at Rocky Mountain Arsenal (5th Revision) was signed by representatives of the Service and the Army in 2009. The annual schedule of operations for 2011 provides an outline for what is to be

done during the fiscal year (October 1st, 2010-September 30th, 2011). This report follows that outline, which documents Service support to the Army in the areas of Mitigation/Restoration, Remedy/Cleanup, and Access Control.

A. Mitigation and Restoration Work Related to Remediation of RMA

A.1 Restoration of Native Shortgrass and Mixed Grass Prairie

Two basic prairie types are seeded as part of the restoration effort at the Rocky Mountain Arsenal National Wildlife Refuge. Project sites with heavier textured soils, such as Weld or Santana, are seeded to a shortgrass prairie mix. Project sites with sandier textured soils such as Ascalon or Bresser, are seeded to become mixed-grass prairie. Typically, all seeded project sites receive irrigation during the first growing season, but in FY 2011, only one site was irrigated by USFWS personnel.

A.1.a. Permanent Native Seeding

Approximately 785 acres were seeded with native seed:

Section	Project number	Seeded Date	Irrigated /non-irrigated	Acres
Refuge -	N/A	01/19/2011	Non-irrigated	150
2	NR	12/20/2010	Non-irrigated	1
3	F26	12/08/2010	Non-irrigated	170
4	F17	12/29/2010	Non-irrigated	22
25	F25	12/02/2010	Non-irrigated	3
29	F23	12/02/2010	Non-irrigated	43
31	F35	11/02/2010	Irrigated	159
32	F35	12/01/2010	Non-irrigated	15
32	F23	12/01/2010	Non-irrigated	7
35	F32	11/15/2010	Non-irrigated	24
35	Corral	04/29/2011	Non-irrigated	35
36	F30/29	11/02/2010	Non-irrigated	156
			Total	**785 ac.**

Table A.1.a.1. FY 2011 permanent native seeding date, type, irrigation and acreage, RMANWR.

A.1.b. Cover Crop Seeding

Cover crop seeding is part of a two-year (sometimes longer) weed control period given to all new project seedbeds. Cover crops provide temporary food and cover for wildlife, prevent soil erosion, collect additional moisture in winter, preserve existing soil moisture, shade out weeds, and provide additional organic matter to the soil. Seeding directly into one- or two-year old mowed cover crop stubble also saves the cost of having to use native weed seed free mulch. Cover crop seeding is part of a conservation tillage system the Service adopted to manage levels of plant residue on seedbeds. This technique helps provide the above benefits with as little mechanical cultivation as possible.

In FY 2011, approximately 387 acres were seeded with cover crops:

Section	Project number	Crop seeded	Acres
Road mitigation	NR	Weld / Santana	70
3	New VC	Ascalon / Bresser	10
23	F49/48	Sorghum	122
24	F21	Sorghum	114
24	F54	Sorghum	37.5
26	F32	Sorghum	18.5
35	Corral pasture	Ascalon / Bresser	15
		Total	**387 ac.**

Table A.1.b.1. FY 2011 cover crop seeding, RMANWR.

A.1.c. Seedbed Preparation

Restoration seedbeds go through a two-year fallow period prior to permanent seeding, during which time all germinating weeds are controlled by a variety of mechanical (plowing, disking, mowing), and chemical means. Mowing is used to prevent unwanted plants from maturing and producing seed. Disking is used to break up the soil, the vegetation, and its root system. Plowing also breaks up the soil and mixes the vegetation residue into the soil.

Seedbed preparation entails the above techniques to deplete the exiting weed seedbank, minimizing weedy competitors and encouraging germination of newly seeded native vegetation. The following tables list the projects that received mechanical and chemical weed control as part of this fallow period prior to their scheduled permanent seeding:

Section	Project	Action	Site Acres
24	F21	Plowing	114
31	F37	Plowing	80
31	F34	Plowing	125
35	F14	Plowing	25
		**** Subtotal**	**344**
Road mitigation	Refuge-wide	Disking	70
12	Rod and Gun	Disking	0.5
23	F49/48	Disking	90
23	71	Disking	2.5
24	F21	Disking	228
24	71	Disking	6
26	F32	Disking	18.5
31	F37	Disking	80
31	F34	Disking	125
35	F32	Disking	55
35	Corral-pasture	Disking	50
35	F14	Disking	25
		**** Subtotal**	**636.5**
3	New VC	Harrow	10
12	Rod and Gun	Harrow	0.5
35	F32	Harrow	24
35	Corral-pasture	Harrow	50
		**** Subtotal**	**84.5**
3	New VC	Mowing	20
12	NR	Mowing	38
23	F48	Mowing	375
24	F21	Mowing	112
26	F32	Mowing	135
26/35	F32	Mowing	200
27	Bison pasture	Mowing	42
29	F23	Mowing	58
31	F37	Mowing	60
31	F34	Mowing	55
31	F34	Mowing	100
35	F32	Mowing	24
35	F32	Mowing	200
36	F30/29	Mowing	56
36	Fire lines	Mowing	165
36	N/A	Mowing	50
		**** Subtotal**	**1,690**
** Most project sites had mechanical treatments at least twice		**Mechanical Site Preparation Total**	**2,755**

Table A.1.c.1 FY 2011 mechanical site preparation and type of activity, RMANWR.

Section	Project	Action	Acres
1	NR	Spray 5/9/2011	86.47
1	NR	Spray 8/1/2011	9
2	NR	Spray 6/14/2011	31.8
5	N/A	Spray 8/22/2011	56.73
6	NR	Spray 7/14/2011	7
6	NR	Spray 6/9/2011	29
7	NR	Spray 6/24/2011	27.7
7	NR	Spray 7/27/2011	10
8	NR	Spray 6/6/2011	105.03
8	NR	Spray 10/06/2010	106.43
11	NR	Spray 3/15/2011	19.84
12	NR	Spray 7/25/2011	47
19	NR	Spray 8/2/2011	12
27	Bison pasture	Spray 7/6/2011	306.06
27	Non-pasture	Spray (Plateau)	291.55
28	Bison pasture	Spray 7/22/2011 2,4-	13.36
28	NR	Spray 10/10/2010 2,	188
31	F34	Spray 5/3/2011	157.49
31	F34	Spray 7/28/2011	31.5
31	N/A	Spray 8/12/2011	28
31	F37	Spray 8/12/2011	39.04
35	NR	Spray 7/1/2011	2
		Chemical Site Prep	**1604.99**
		Total Project Prep	**4,359.99**

Table A.1.c.2 FY 2011 chemical site preparation by project and chemical applied, RMANWR.

A.1.d. Habitat Maintenance Performed on New Restoration Projects

New restoration projects that have been seeded typically do not receive herbicide treatments due to the risk of damaging sprouting vegetation. The most common treatment on new restoration projects is to mow germinating broad-leafed weeds to no more than one foot in height to prevent shading of emergent vegetation. By mowing the broadleaves, light is able to reach the understory so that the native seeds can germinate and grow. Typically, new restoration projects need to be mowed two or three times during the first growing season depending on precipitation.

The following are projects in the first growing season that had to be mowed in FY 2011:

Section	Project	Treatment	Site Acres	Treated Acres
3	F26	Mowing	209.16	170
3	F26	Mowing	209.16	35
5	F56	Mowing	18	18
5	F01	Mowing	98.6	85
5	F06	Mowing	111.3	14
6	79-03	Mowing	77.5	9
8	F20/11	Mowing	141.9	210
19	F27b	Mowing	49	49
24	F54	Mowing	140.4	93
24	F57	Mowing	114.4	100
29	F23	Mowing	78.7	43
30	F18	Mowing	unknown	30
31	F35	Mowing	159	159
31	97	Mowing	unknown	68
32	F23	Mowing	7	7
32	F72	Mowing	468.3	44
34	57c	Mowing	273.7	30
36	F30/39	Mowing	163.4	156
			Total	**1,320**

Table A.1.d.1. First-year projects and acreage mowed in FY 2011, RMANWR.

A.2. Maintenance and Monitoring on Habitat Restored in Prior Years

A.2.a. Habitat maintenance Preformed on Prior Restoration Seedings

The following table shows chemical treatment performed on permanently seeded restoration projects. Staying on top of project maintenance is a crucial part of the restoration effort, allowing staff to control weeds and prevent them from setting seed. The following areas were treated in FY 2011:

Section	Project	Action	Acres
1	79	Spray 10/13/2010	4
1	55	Spray 08/27/2011	1
2	F46	Spray 07/22/2011	29.25
2	F16	Spray 06/29/2011	16
3	41-06	Spray 06/27/2011	13
3	26	Spray 09/10/2011	6.5
3	63	Spray 08/10/2011	11.5
4	F60	Spray 07/25/2011	68.58
4	17/56	Spray 08/11/2011	13
4	56b	Spray 08/10/2011	10
5	F01	Spray 08/18/2011	93.55
5	F37	Spray 08/17/2011	66.65
5	F08	Spray 08/18/2011	29.18
6	79	Spray 07/10/2011	31.82
6	56	Spray 07/23/2011	4.18
7	88	Spray 06/23/2011	45
8	F20	Spray 07/20/2011	4
8	68	Spray 10/21/2011	44.16
11	90	Spray 08/15/2011	7
11	F02	Spray 08/16/2011	9
12	54/91b	Spray 08/01/2011	15
12	91a	Spray 08/14/2011	5.16
23	F49/48	Spray 08/25/2011	505
24	F49	Spray 07/06/2011	18.02
25	F25	Spray 06/16/2011	14.2
25	F22	Spray 06/30/2011	3
25	98	Spray 06/30/2011	4
29	F64	Spray 08/23/2011	35.69
23	F49	Spraying	22.58
24	F57	Spraying	3.24
26	F32	Spraying	26
30	F24	Spraying	77.54
35	F32	Spraying	273
36	F29	Spraying	1
1,2,3,4,5,6,7,8,11,20, 23,24,25,26,27,28,29, 30, 31,32, 35	Refuge-wide	Helicopter Spraying (Plateau)	4,191.189
		Spraying Totals	**5,756.719**

Table A.2.a.1. Habitat maintenance performed on permanently seeded projects in FY 2011, RMANWR.

A.2.b. Integrated Pest Management Program (IPM)

Introduction

The State of Colorado Noxious Weed List includes 71 weed species, 26 of which occur or have occurred on the Refuge. Weed species pose a significant threat to habitat restoration efforts by outcompeting native vegetation. The Service therefore employs an Integrated Pest Management (IPM) approach to weed control which utilizes mechanical, biological, chemical, and cultural (prescribed burns) methods as appropriate throughout the Refuge.

Methods

The Service used 19 Pesticide Use Proposals (PUP's), approved by the Refuge Project Leader, for treating the increasing diversity and acres of weeds in FY 2011. These PUP's have been submitted for re-approval for FY 2012. The existing Refuge IPM plan expired in October of 2008 and a new plan is currently being reviewed. Once approved, it will be valid through 2015.

New restoration projects typically receive two years of weed control in an attempt to exhaust the exiting weed seedbank. These areas are closely monitored to observe weed phenology and germination in order to determine the best chemical control.

The Service continues to utilize contract helicopters as a cost effective method to apply herbicides to large areas. A total of 4,191 acres were sprayed in FY 2011, most with glyphosate and some with dicamba. Depending on the proximity of spray sites to each other, the helicopter can spray up to 100 acres per hour. The speed at which this operation is completed allows for a more temporally relevant application window and the use of GPS technology prevents "striping", a phenomenon associated with ground-spraying rigs when not enough overlap occurs between spray passes.

Mechanical methods were also used to control a variety of weeds outside habitat restoration areas. These methods included mowing, digging, hand pulling and light disking. In FY 2011, the Mile High Youth Corps and Groundwork Denver crews removed 434 Russian olive (*Elaeagnus angustifolia*) and surveyed and treated 170 acres of houndstongue (*Cynoglossum officinale*).

The following table shows chemical weed control that was completed in non-restoration project areas throughout the Refuge. Nearly all these areas are adjacent to existing restoration projects, with some being newly seeded while others are in remnant vegetation communities which require protection from degradation by weed species.

Section	Project	Action	Site Acres
5	N/A	Spraying	56.73
35	Bison pasture	Spraying	8
Road shoulders	Refuge wide	Spraying	30
Refuge trails	Refuge wide	Spraying	15
		Total	**109.73**

Table A.2.b.1. IPM weed control conducted on projects in FY 2011, RMANWR.

Results and Discussion

In FY 2011, a total of 7,471 acres received chemical control for exotic or invasive species, 1,065 acres were mechanically tilled, and 3,010 acres were mowed. In addition, 1,172 acres were seeded to either permanent or cover crops.

A.2.c. Vegetation Monitoring

Introduction

The objectives of the vegetation monitoring program are to:

1. Objectively assess the overall success of habitat restoration efforts by comparing baseline vegetation data with post-implementation data.
2. Determine if seeded species are represented in the vegetative community in the same proportion as they were seeded.
3. Reveal which species have established the most and least successfully from the overall seed mix on the restoration site.
4. Determine the actual composition, density, and diversity of seeded sites over time to determine range trend and condition.

Methods

Data are collected from randomly placed 50-meter fixed point-line transects. Points along the transects are placed at one meter intervals, a half-meter on each side of the transect and observed using an Optical Sighting Device (OSD) placed directly overhead and perpendicular to it. The general rule is a minimum of one transect for every six acres, and a maximum of 20 transects per site. Baseline data are ideally taken prior to restoration field work commencing on a project. Once an area is seeded, vegetation monitoring takes place in the third and fifth growing season and then every five years thereafter until restoration sites become successful according to the established criteria.

Results and Discussions

One hundred and sixteen transects were sampled in 15 projects in FY 2011. Success status and data analysis for the following projects are not stated in this report due to the inability to access the vegetation monitoring database that has been used in previous years to calculate success of restoration stands and track changes in vegetation trends.

Project	# of Transects	Section	Acres	Growing season
41-06	7	2	42.87	5th
43-02	1	34	5.9	10th
54-04	12	12	71.18	5th
67A	7	7	42.77	15th
74	13	33	77.43	10th
82	3	2	20.32	9th
88	13	7	76.69	5th
90N	5	11	31.98	5th
90S	10	11	56.59	5th
91A	13	12	78.14	5th
91B	14	12	82.57	5th
F03	2	24	12.58	5th
F05	11	6	65.75	4th
F56 redo 79-03	4	5,6	21.21	3rd
F59	1	36	2.46	3rd

Table A.2.c.1. Summary of vegetation monitoring efforts in FY 2011, RMANWR.

B. Remedy and Cleanup Activities and Support to Army and Remediation Venture Office

B.1. Wildlife Health Monitoring Studies and Designated Species Collections per the Contaminant Biomonitoring Plan

B.1.a. American Kestrel Population Monitoring FY 2011

Background

The American kestrel (*Falco sparverius)* was selected as one of the sentinel species for the refuge biomonitoring program because its foraging activities result in bioaccumulation of Persistent Organic Pollutants (POPs) from insects and small mammals, aldrin and dieldrin being the chief chemicals of concern at RMANWR (see the BMP for a complete description).

Introduction

Collecting eggs for contaminant analysis under the BMP began in FY 2010 with the directive to collect three years of egg samples from each designated nest box. Sample collection proceeds as a 2-phase process: Phase 1 – Detection of Dieldrin Levels in Eggs, and Phase 2 – Detection of Dieldrin in Brains (only if needed). Phase 1 evaluates dieldrin concentration in eggs at both the individual nest box site and by groups of nest boxes for exceedance of detection limits above No Observable Adverse Effect Concentrations (NOAEC, 0.5µg/g) and the Maximum Allowable Total Concentration (MATC, 1.0µg/g). If dieldrin concentrations at one or more sites exceed the MATC, the BMP directs implementation of Phase 2 requiring the collection of a chick and evaluation of dieldrin concentrations in brain tissue. Monitoring activities in FY 2011 only relate to Phase 1 – Detection of Dieldrin Levels in Eggs.

There are 37 nest boxes situated within the boundaries of RMANWR, each located approximately one mile apart in each direction at or near the intersection of primary and secondary roads and along perimeter fences. The nest box locations are categorized as "core" and "periphery" with 12 core and 15 periphery nest boxes. This accommodates biomonitoring of the forage and reproductive range of nesting kestrels utilizing the nest boxes throughout the Arsenal, although periphery nest boxes accommodate birds potentially foraging both within and outside of the Arsenal boundaries.

Personnel

Following the departure of USFWS biologist Sherry Skipper, RVO toxicologist Scott Klingensmith provided oversight of biomonitoring activities throughout the fiscal year. Field activities were coordinated and supervised by Brian Fairchild, USFWS biological science technician (STEP), with assistance from biological science technician (STEP) Leeland Murray, and ranger (STEP) Abby Wright. In addition, four USFWS volunteers and four seasonal employees were trained on biomonitoring protocols and intermittently assisted with field work.

Pre-season Activities

Thirty-seven nest boxes were prepared for monitoring in FY 2011. Sites were in good condition and required only minor preparation such as clean-out, addition of aspen chips, and repainting of numbers. Throughout the fiscal year, there were eighty-eight nest box visits for maintenance.

Biomonitoring Field Activities

Nest boxes were visited approximately twice weekly 3/1/2011 - 8/12/2011; reproductive activities were observed and recorded, including competition from European starlings (*Sturnus vulgaris*) and northern flickers (*Colaptes auratus*) precluding kestrel utilization (competitor nesting attempts were removed when observed). Eggs in developing kestrel clutches were sequentially marked with a pencil as each new egg was observed. A total of 1,059 nest box visits were carried out at the 37 kestrel sites, averaging 28.6 checks per box throughout the reproductive season.

Protocol required collection of a random egg when the clutch reaches five eggs. Review of the FY 2010 egg collections revealed opportunities to collect eggs that were lost to progressive decline of nests with fewer than five eggs. To prevent lost sampling opportunities, the protocol was slightly modified to allow collection from these sites (per discussion between Scott Klingensmith and Brian Fairchild).

When clutches reached five eggs, or when a clutch was observed in decline, a random egg was collected from each clutch. Eggs were placed in a certified-clean two-ounce glass jar and insulated with VWR light-duty tissue wipes to prevent breaking during handling and transport. Jars containing eggs were placed in a cooler containing H_2O ice to halt development, and then stored in a freezer at -10^{o}C upon completion of daily biomonitoring activities.

Nesting Activity

Table B.1.a.1 shows the proportional use of available nest boxes. Single clutches were observed in most nest boxes used for reproduction, however five boxes had two each. In the 18 nest boxes

used for reproduction, 24 nest attempts were observed; 12 in core sites and 12 in the periphery. 25% of all the nest attempts failed (6/24), 3/12 in the core (25%), and 3/12 in the periphery (25%) (See Table B.1.a.2). European starlings attempted to nest 171 times in 21 of the nest boxes and one northern flicker made an attempt in another box. All non-kestrel nest attempts were removed to promote nesting of the target species.

Nest Box Usage	Core (12)	Periphery (25)	Total (37)
# of boxes used for reproduction	8	10	18
% nest boxes used	36.4	66.7	48.7

Table B.1.a.1 FY 2011 Nest box usage, RMANWR

AK Nesting Activity	Core (12)	Periphery (25)	Total (37)
Nest attempts	12	12	24
Abrupt ends	3	3	6
% nest failures	25	25	25

Table B.1.a.2 FY 2011 American Kestrel nesting activity, RMANWR.

Eggs Collected

The egg collection protocol changed slightly in FY 2011. Scott Klingensmith rescinded the changes (collection of the 1st egg laid in each clutch) directed by Sherry Skipper because it was not in compliance with the Biological Monitoring Plan (BMP) requirement to collect one random egg from the clutch. Collection in FY 2011 followed BMP protocols. In addition, review of the FY 2010 egg collections revealed opportunities to collect eggs lost due to clutch decline. To preclude lost opportunities to collect samples, standards were slightly modified to allow collection of a random egg from declining clutches with less than 5 eggs (per discussion between Scott Klingensmith and Brian Fairchild).

Collected eggs were placed in a certified-clean two-ounce glass jar lined with VWR light-duty tissue wipes to prevent breaking during handling and transportation. Jars containing eggs were placed in a cooler containing H_2O ice to halt development and then stored in a freezer at -10^{o}C upon return from the field.

Twenty-nine of 129 eggs laid were collected, 14 from core and 15 from periphery nest boxes. One egg was collected from a declining nest, box 4NW, when the clutch went from 4 eggs to 2. The clutch ended abruptly after this collection. The majority eggs were standard collections, however, there was an accidental second collection from a clutch at 35NE, one egg was collected at 33NW after the technician poked a hole in it while marking it, and one egg found on the ground intact below the box at 12SW was collected.

Banding Fledglings and Checking Adult Bands

To the greatest extent possible, chicks were banded prior to their actual fledge from the nest box, about 25 days after hatching. In addition to placing each bird's unique band on its right leg, the sex, mass, and length of the wing cord are recorded. To determine if adults return to RMA, those observed in nest boxes were assessed for the presence of leg bands. These checks generally

occurred once for each male and female, though a few additional checks occurred during field technician training. One adult male at 35NW, originated from RMANWR in 2007.

Lab Activities

Collected eggs were allowed to partially thaw at room temperature in the RMANWR lab for approximately 30 – 45 minutes to allow removal of the shell. Egg content was transferred to 2 oz. certified clean jars, labeled, chains of custody generated, and packaged for submission to Southwest Research Industries (SWRI) in San Antonio, Texas for contaminant analysis. Of the 28 total eggs collected, 23 were suitable for submission.

Activity	Refuge-wide	Core	Periphery
Initial Nest Starts/second nest	19/5	9/3	10/2
Nest boxes Available	37	12	15
# Successful Nests (at least 1 fledgling)	6	4	2
Total # Eggs Incubated	129	62	67
Average Clutch Size per Nest	5.4	5.2	5.6
Total # Hatchlings	21	11	10
Hatching Success (#nestlings/ # eggs)	16.3%	17.7%	14.9%
Total # Fledglings	16	10	6
Reproductive Success (#fledge/ #eggs)	12.4%	16.1%	9.0%
# Fledged/ Successful Nest	2.66	2.5	3.0

Table B.1.a.3 Summary FY 2011 American kestrel activity data, RMANWR.

Summary Contaminant Data Analysis

Four sample results were over the No Observable Adverse Effect Concentrations (NOAEC) of 0.05 µg/g (one from site 27NW and three from 35NE) with none of these greater than the Maximum Allowable Total Concentration (MATC) value of 1.0 µg/g

B.1.b. European Starling FY 2011

Sample Locations

The BMP identified 24 sites for placement of starling nest box arrays. These sites provided a representative number of arrays from each of the five Soil Remediation Types, described in the BMP as: None (No Remediation), Excavation (Priority 1 borrow area), Excavation and backfilled remediation sites, Tilled TRER Sites, and Engineered caps and covers. An additional site (35A), located west of Building 111, was established due to USFWS interest when samples collected from this array in previous years continued to have measurable levels of organochlorine pesticides despite several local clean-up projects (excavation and backfill). This addition brings the total potential sites to be monitored to 25. An evaluation of the suitability of the 9 sites monitored in the FY 2011 field seasons included identifying areas of current construction and restoration activities as these activities can negatively affect habitat in the starling's foraging area.

In addition, an evaluation of the habitat within the estimated forage area was performed. Evaluation of nest box sites for suitable habitat is very important as starlings are omnivores and

primarily feed insects to their young. Starlings are essentially grassland feeders and take invertebrates from foliage, the surface of the ground, and the upper few centimeters of the soil. During breeding season and while feeding young, their diet consists almost entirely of invertebrates obtained from the surface or from the upper few centimeters of the soil of grass fields. Sparse habitat in the feeding range around the nest box arrays may result in a lower density of invertebrates and an increase in forage area which in turn may adversely impact nest box occupancy and nest success.

Nine of the 25 potential sites were monitored in FY 2010. The remediation strategy in the foraging range for each nest box array is listed in Table B.1.b.1, and a description of each remediation strategy can be found in the BMP. Each nest box array contains ten boxes. The two cap and cover arrays (1NC, 36SC), two of the Tilled Terrestrial Residual Ecological Risk (TRER) arrays (25CC, 26NW), and three of the Priority 1 borrow area (excavation with no backfilling) arrays (23SC, 24SW, 26WC) were not monitored in FY 2007, FY 2008 and FY 2009 because of remediation and restoration activities. In FY 2010, array 25CC (TRER) was the only one not monitored for the same reasons. Following the FY 2010 monitoring season, several arrays met BASBMP monitoring requirements (minimum three years) and nest-boxes were progressively closed (2SW, 4NC, 4SW, 6NC, 6NW, 7, 20NW, 20SE, 24NW, 26CC, 27, 30SW, 31SW, 35A, 35WC, 36NW) but not dismantled pending analytical results and guidance from regulatory agencies. Additionally, during FY 2010, development of adequate habitat supporting nesting/reproductive activity within Section 25CC allowed installation of a ten nest-box European starling array in Section 25CC prior to the FY 2011 reproductive season.

Site ID	Remediation Strategy	Site ID	Remediation Strategy
1NC	Caps and Covers	25NE	No Remediation Activity
1WC	TRER	26NW	TRER
23SC	Excavation (Priority 1 Borrow Area)	26WC	Excavation (Priority 1 Borrow Area)
24SW	Excavation (Priority 1 Borrow Area)	36SC	Caps and Covers
25CC	TRER		

Table B.1.b.1. Nest box arrays monitored in FY 2011 with remediation strategy for each array, RMANWR.

Nest Box Monitoring

An effort was made to monitor all nest boxes at least twice each week during the monitoring season. Information from each site was recorded on a nest box monitoring sheet, one of which was used for each monitoring date. Nest condition was rated 1-4 using the following criteria:

1 -no nesting material present
2 -some nesting material present but no nest cup formed
3 -partially formed nest cup present
4 -completely formed nest cup present

Other information recorded on the monitoring data sheet included the number of eggs present, number of chicks present, and the presence of any unhatched eggs or dead chicks. Abnormalities found during monitoring were recorded in the comments section of the nest box monitoring form. Results from nest visits and reproductive success endpoints derived from these data are summarized in the raw data files for this project. For further details on the procedures used for

nest box monitoring and analysis of reproductive endpoints, refer to the U.S. Fish and Wildlife Service Rocky Mountain Arsenal National Wildlife Refuge Fiscal Year 1994 Annual Progress Report, Appendix A.

Sample Collection

Starling nestlings were collected as close to 15 days post-hatch as possible, allowing for maximum potential exposure. At day 21, fledging occurs, and the starling young are independent of their parents. Some variability occurred in the collection of chicks due to holidays, weekends and workload, but chicks were at least 15 days of age at time of collection. Nestlings were euthanized in a pre-charged CO_2 saturated chamber and given a unique identification number according to the site, nest box and date collected. Whole birds were frozen at -20^o C until ready for dissection. Brains were removed and stored in a chemically cleaned jar at -20^o C until they were shipped for chemical analysis to Southwest Research Institute (SWRI) in San Antonio, Texas. Samples were tracked with chain of custody information submitted electronically through the Army laboratory and hard copies were delivered to SWRI with the samples.

Nesting Data

During FY 2011, all sites showed evidence of starling activity with various stages of nest building observed in most boxes (table B.1.b.2). Individual nest boxes can be occupied for up to two complete cycles of nesting during the starlings' reproductive season (March-July). Occupation of nest boxes varied between the different sites and ranged from 5 to 19 nests initiated per site.

Site ID	Nests Initiated	Nests w/at Least One 15-day-old Chick	% Nests Initiated w/at Least One 15-day-old Chick
1NC	5	4	80
1WC	10	9	90
23SC	8	4	50
24SW	9	3	33
25CC	17	10	59
25NE	18	10	56
26NW	9	5	56
26WC	19	14	74
36SC	7	6	86
Totals	102	65	64

Table B.1.b.2. FY 2011 European starling nest box arrays with number of nests initiated per site, RMANWR.

Summary Contaminant Data Analysis

Ninety-four samples were submitted to SWRI in FY 2011. The target sample weight for a method detection limit of 0.05 µg/g is 1 gram. If a sample weight was less than 1.0 gram, the sample was analyzed with a resulting Detection Limit (DL) greater than 0.05 µg/g. The detection limit varies according to the sample weight with an increasing detection limit associated with a decreasing sample weight. Ninety-two samples had weights that were equal to

or greater than 1.0 gram. Sample weights were variable as brain weight is dependent on the size of the nestling. Fifteen sample results were over the contracted Method Detection Limit (MDL) of 0.05 µg/g. No sample results were equal to or greater than the MATC value of 1.0 µg/g.

B2. Management of Black-tailed Prairie Dogs

Black-tailed prairie dog management was a high priority for FY 2011. An entire summer crew was brought on with two summer STEP students, one SCA intern, and one year-round STEP. Throughout the summer and early fall several part time volunteers, and one full time volunteer also joined the crew. Mapping for FY 2011 was not completed due to late season training and lack of familiarity with ATVs and the Trimble unit. Hence, the FY 2010 acreage of 3,863 acres of prairie dog towns is represented in this report. The majority of the crew's efforts for the summer were to protect army lands. Several prairie dogs were found on the ICS and sewage lagoons. In addition to trapping and flushing, dispatching of targeted individuals was implemented in areas of public health and safety. This report outlines trapping, flushing, and dispatching efforts for FY 2011.

B.2.a Survey and Health

Unlike previous years, a prairie dog colony survey has not yet been completed. Several sections have been mapped using an ATV and a Trimble Geo XH GPS unit, though commencement of the mapping process was delayed due to lack of training and adverse weather conditions.

No plague was detected at RMA this year and relocated individuals appeared healthy. There was one exception, a small juvenile flushed from outside Building 129. The juvenile had no use of its back legs and was emaciated. The cause is unknown, but one theory is that the juvenile may have been hit with a pellet during dispatch operations and ran down its burrow. No other prairie dog surveys were conducted for FY 2011.

B.2.b. Relocation and Colony Control Efforts

Trapping and Flushing

Trapping was fairly successful this year, except in summer. Vegetation grew very fast, dense, and tall this season due to large rainfall events. Prairie dogs were not taking the bait provided in the traps, and the abundance of natural forage could be an explanation. Due to reduced trapping success, the crew focused their efforts on removal with flushing. They were very successful with this method, especially in areas with shallow burrows. Initially all burrows were flushed. After several days of little success, it was decided to watch the town and flush only occupied burrows. This method was very successful and also helped save water. The priority areas changed frequently due to changes in projects and opinions of where it was most critical to have prairie dogs removed. The ICS had a fairly large influx of prairie dogs this year and the majority of the crew's efforts were spent removing prairie dogs from it and the sewage lagoons. Data were recorded using the system that was implemented in FY 2010. Map 1 shows where each zone is located and what method was used; trapping only, flushing only, trapping and flushing, and the outline of each dispatch zone.

A total of 695 prairie dogs were captured using trapping and/or flushing (Table B.2.b.1), 421 were trapped, while flushing accounted for 274. The majority of individuals captured were

relocated to Section 22, but some captured close to Sections 12 or 32 were released in those Sections when conditions allowed.

Dispatching

This year a new control method was initiated in areas of public health and safety. The USFWS was granted approval to dispatch prairie dogs, via shooting, that were within a 100-yard buffer zone of any area where they could be a potential health or safety concern for humans. Several USFWS staff attended a non-law enforcement firearms training course that allowed them to use pellet rifles for dispatch efforts. The areas considered to have a potential health and safety concern included: caps and covers, landfills, buildings, and sewage lagoons. These areas are outlined in red on the map at the end of this section (Figure B.2.b.2). A total of 507 prairie dogs were dispatched in these zones or the 100-yard buffer zone surrounding them (Table B.2.b.1).

Conclusion

A new method of prairie dog control was introduced in the form of lethal control by shooting in areas of public health and safety concerns. Because of high summer vegetation, efforts also shifted from trapping to flushing resulting in a higher success rate. A total of 1,202 prairie dogs were removed from areas of concern by either trapping, flushing, or dispatching (Table B.2.b.1). Increases in the acreage of towns and the number of individuals over the past several years has more than likely contributed to an increase in the number of relocations and removal in FY 2011(Figure B.2.b.1).

Total Relocations by Zone ID#			
Total PD 695			
Zone ID#	Trap	Flush	Total
236	0	2	2
240	0	4	4
316	0	0	0
317	0	0	0
318	0	28	28
328	3	1	4
329	20	27	47
330	0	52	52
334	0	1	1
346	123	0	123
348	102	0	102
351	25	0	25
356	25	0	25
359	10	0	10
364	8	16	24
365	0	7	7
368	4	0	4
369	53	3	56
370	12	0	12
371	18	6	24
373	0	16	16
374	7	7	14
375	0	6	6
376	1	53	54
377	0	18	18
378	0	11	11
379	10	5	15
381	0	2	2
382	0	6	6
*UNK	0	3	3
* Zone ID# was not recorded for 3 individuals			
Dispatch Totals by Location			
Total PD 507			
Location		PD Dispatched	
Buildings		186	
Lagoon		105	
Basin F ICS		26	
ELF		69	
ICS		121	
Total Prairie Dogs Relocated/Removed			
Trap	Flush	Dispatch	Total
421	274	507	1202

Table B.2.b.1: Totals for trapping, flushing, trapping and flushing, dispatching and a total of all forms of prairie dog removal for the FY 2011 season, RMANWR.

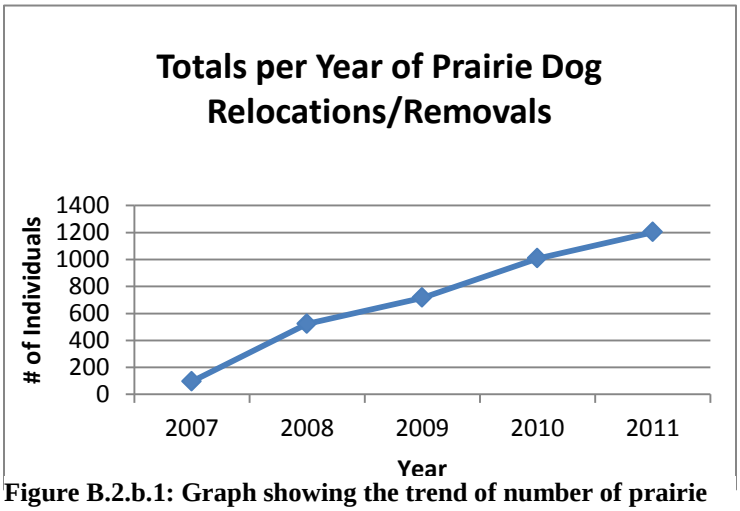

Figure B.2.b.1: Graph showing the trend of number of prairie dogs relocated, or removed by shooting in the case of FY 2011, by year from FY 2007 to FY 2011. The number of relocations and/or removals has increased each year from the previous, RMANWR

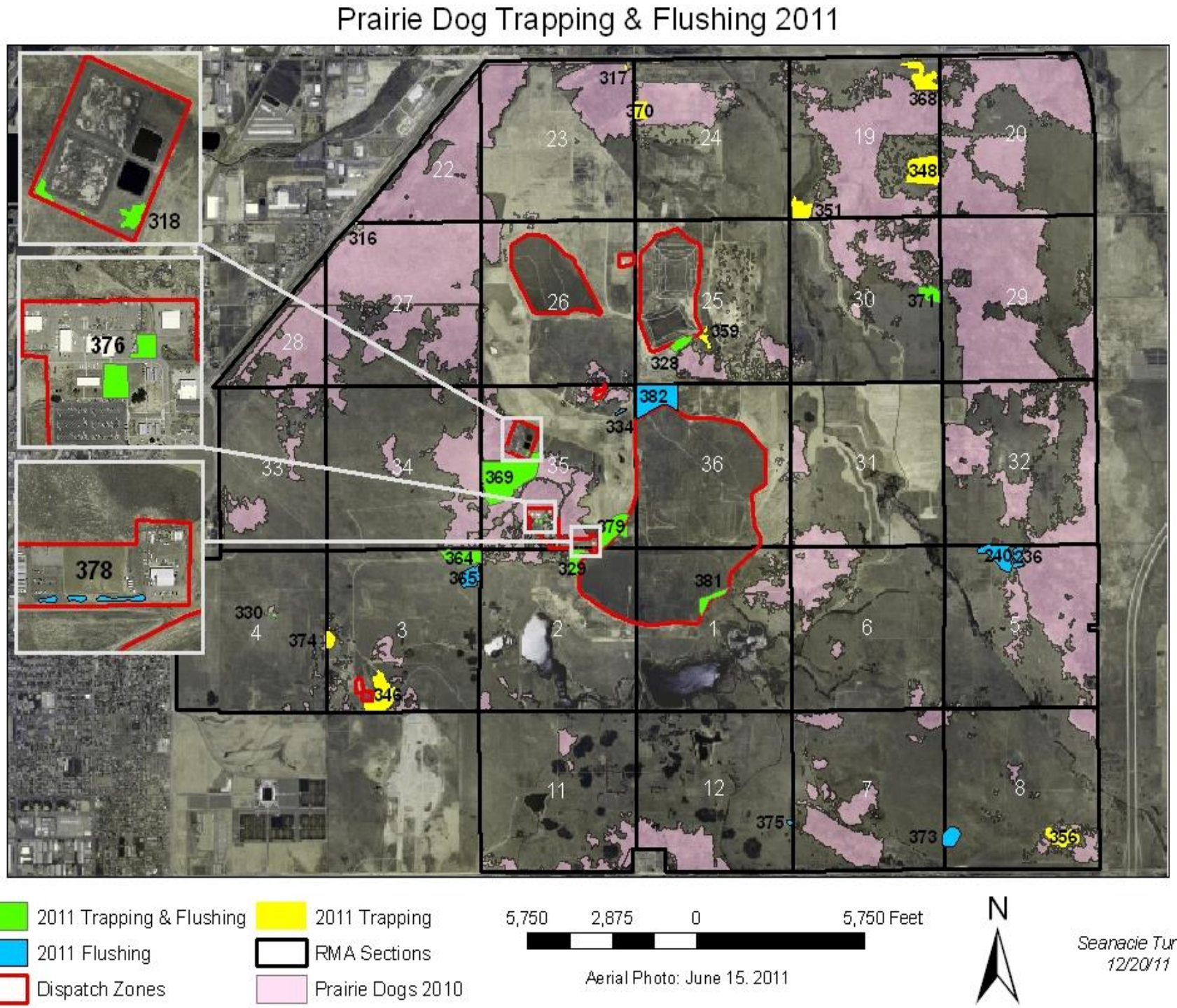

Figure B.2.b.2. FY 2011 Prairie dog trapping and flushing locations, RMANWR.

B.3. Monitoring and Surveying of Aquatic Biota to Meet ROD Requirements Related to Aquatic Ecosystems and the ROD-based Lake Level Management Plan

In prior accomplishment reports, information for this section was presented as an appendix, The Lake Level Management Report, which was produced through 2007. Waterfowl surveys were continued through a five-year review period and fisheries resources continue to be assessed.

B.3.a. Five Year Summary of Winter Waterfowl Survey (2005 – 2010)

Introduction

The primary ecological function of Lower Derby Lake, for the duration of the surface remedy, is to provide waterfowl habitat. Seasonal drawdowns of Lower Derby Lake during the spring and summer months promoted the growth of aquatic and wetland vegetation and stimulated populations of aquatic and terrestrial invertebrates at the lake's edge that provided the plant and animal food base required by waterfowl during the migration and wintering periods. A minimum of 50,000 migratory waterfowl annual use-days during the period of October - April, is required by the water protection plan. Target species include but are not limited to: Canada goose (*Branta canadensis*), wood duck (*Aix sponsa*), gadwall (*Anas strepera*), American widgeon (*Anas americana*), mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), cinnamon teal (Anas cyanoptera), Northern shoveler (*Anas clypeata*), Northern pintail (*Anas acuta*), green-winged teal(*Anas carolinensis*), canvasback (*Aythya valisineria*), redhead (*Aythya americana*), ring-necked duck (*Aythya collaris*), greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*), common goldeneye (*Bucephala clangula*), bufflehead (*Bucephala albeola*), hooded merganser (*Lophodytes cucullatus*), common merganser (*Mergus merganser*), red-breasted merganser (*Mergus serrator*), and ruddy duck (*Oxyura jamaicensis*).

Methods

Rocky Mountain Arsenal NWR provides waterfowl with year-round habitat, but its greatest use occurs during fall and spring migrations and winter months. Waterfowl surveys were conducted annually from mid-September thru mid-April to monitor relative abundance, diversity and distribution. Surveys were conducted biweekly averaging two surveys each month. They began two hours following official sunrise and counts were recorded from standard observation points. A spotting scope and binoculars were used to view and count waterfowl. Observation points at survey sites were chosen to maximize visibility of the lake area. Weather conditions, lake level, and ice cover were also recorded. Use days reflect the average number of individuals counted on consecutive surveys multiplied by the number of days between those two surveys. Only targeted waterfowl use of Lower Derby from November 2005 through April 2010 is presented in this report.

Results

The appearance of migratory waterfowl on Refuge lakes is dependent in part on seasonal weather changes and ice conditions on lakes north of Colorado. Furthermore, each species has its own migration pattern through Colorado which is determined by when and where they finished their breeding cycle. Some species passed through the Refuge lakes on their way further south and

others utilized the metro Denver area as a final destination provided they can find food and open water.

The month at which the minimum of 50,000 use days for the winter season was attained has varied over the years. It was reached as early as November in 2005 and 2007, during December in 2009 and as late as March in 2006 and 2008 (See Figure B.3.a.1). The three years of early achievement of use-day goals were due to high numbers of Canada geese and cackling geese (*Branta hutchinsii*) with variable water levels and ice coverage (See Figure B.3.a.2). Away from their breeding grounds, geese use water bodies as places to loaf and rest overnight, consuming waste grains on land. In contrast, the years with late realization of the targeted use days, had spring returning dabblers, Northern shovelers and gadwalls, as the most abundant birds, combined low to moderate water levels, and very high ice coverage for extended periods. Dabbling ducks feed in shallow waters, which would be the first areas to become available as ice melted.

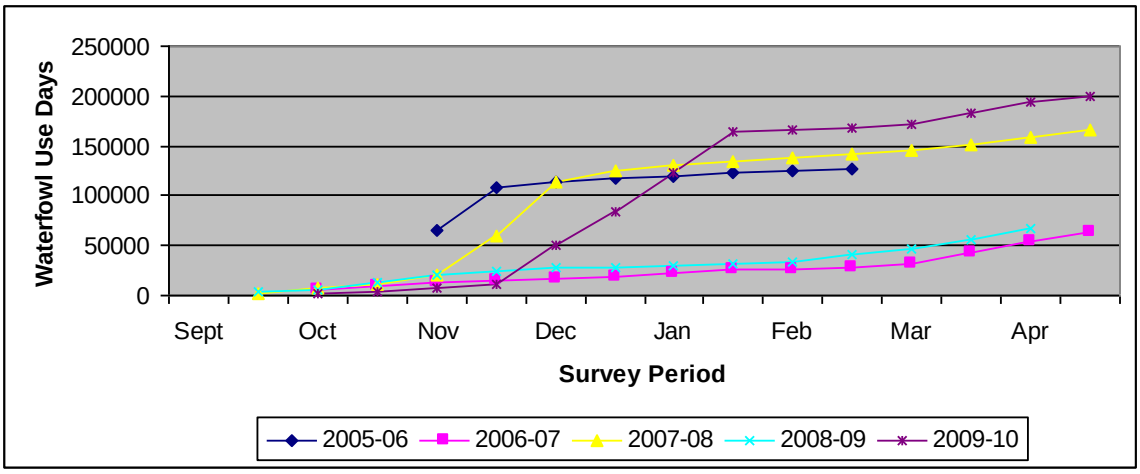

Figure B.3.a.2. Waterfowl use days on Lower Derby Lake for the FY 2005–FY 2010 review period, RMANWR.

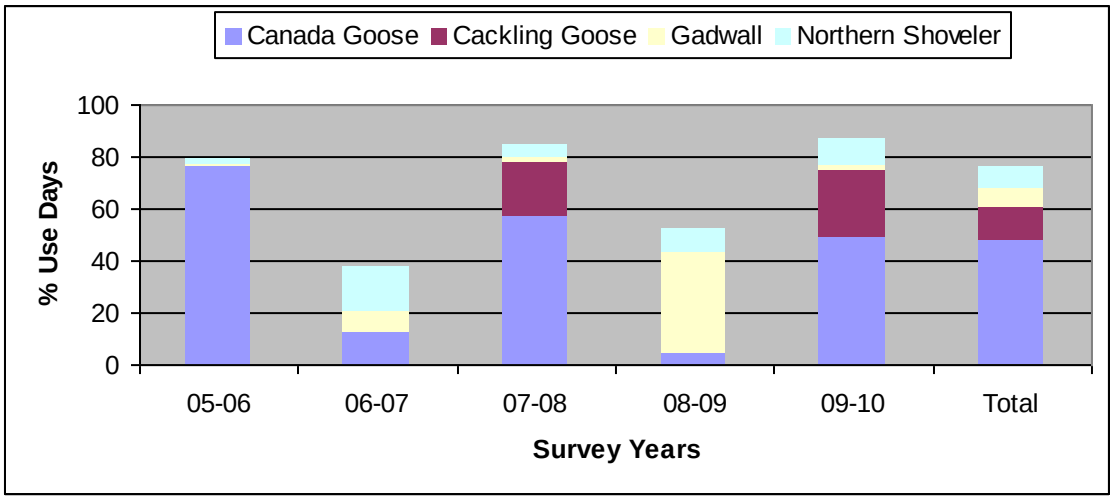

Figure B.3.a.2. Waterfowl species contributing the highest number of use days on Lower Derby Lake from FY 2005– FY 2010, RMANWR.

B.3.b Fisheries Resources

The RMA step-down Fisheries Management Plan prepared in 2005 proposed long-term monitoring (2006-2011), including annual fish surveys (electroshocking, gillnetting, and creel surveys), water quality testing (standard water tests and invertebrate sampling), and maintenance (water control structures and boats). Since then, the number of Service staff able to assist with aquatic ecosystems has diminished, considerably reducing monitoring efforts. Table B.3.b.1 lists the management actions for each lake accomplished in FY 2011.

Survey	Lake Mary	Ladora	Lower Derby	Comments
Population Assessment				
Electrofishing	6/13-16			Assisted by CDOW
Gillnetting, Fyke nets & minnow traps	6/15-16 6/27-28			
Stocking				
Bluegill	2000	23225	22000	Total fish stocked of various sizes on 8/12/ & 9/7
Fathead minnow		23000	22175	
Channel catfish			700	
Removal/relocate				
Largemouth bass		See photo documents		Fish removed from Ladora inlet trough and placed in lake on 6/10-11
Green sunfish				
Bluegill				

Table B.3.b.1. Aquatic sampling and stocking in refuge lakes in FY 2011, RMANWR.

Figure B.3.b.1. Student employees and volunteers assisting with aquatic sampling in FY 2011, RMANWR.

B.4. Monitoring of Wildlife Populations Impacted by Cleanup Projects

The objectives of Service wildlife population monitoring on the Arsenal during FY 2011 were to maintain reproductive success of raptors and avoid impacts of restoration and cleanup projects on wildlife species by providing technical assistance to field personnel.

Sub-contractor's meetings discontinued in FY 2010 were replaced by weekly projected field activity requests through emails from Nate Spencer. Vegetation monitoring meetings were attended regularly to provide technical assistance on wildlife issues. Jeff Krause announced field work done by PMC at weekly USFWS meetings. Wildlife ZIP bulletins were edited for Cheryl Medford and field projects were reviewed for wildlife conflicts.

Birds of prey exhibit strong nest site fidelity, meaning they return to the same nest territory, so their presence in an area can be reliably predicted. Therefore, reduction of impacts on raptors involves ascertaining when each species arrives on site and then determining the nesting chronology for each pair. Raptor nest monitoring begins in February with great horned owls (*Bubo virginianus*) and ends in September with the out-migration of Swainson's hawks (*Buteo swainsoni*) and burrowing owls. In FY 2011, ten great horned owl, 22 burrowing owl, 12 red-tailed hawk (*Buteo jamaicensis*), and 11 Swainson's hawk nests were monitored (see figures B.4.1 and B.4.2). A long-eared owl (*Asio otus*) winter roost of approximately nine birds was

located in the locust thicket in northwest 31, but no nests were found. An artificial structure consisting of a woven wood woven basket with a moss lining placed near the roost was not used in 2011.

No raptors were significantly impacted by contracted cleanup projects during the breeding season. An osprey pair did attempt to place nesting material on the telephone poles on 7th avenue without success and were seen near the nest platform in April, May and June (figure B.4.3). Since eggs are laid by mid-April in Colorado, these birds were apparently unsuccessful breeders or their nest was off post. The Swainson's hawk nest site on C Street in Section 26 was of concern on three occasions. The adults began building the nest as C Street was scheduled to be paved in May. By the time it was completed, the birds were incubating eggs. Apparently the machinery did not cause any disturbance as the hawks did not abandon the nest. The removal of non-functional telephone poles occurred in June. During the fledging period, the young were often on C Street in July (figure B.4.4).

After raptors, other nesting bird species were the most frequently impacted by cleanup and restoration activities. Ground nesting birds did not affect field operations in FY 2011. However, bird nests found in equipment that required removal were dominated by American robins (*Turdus migratorius*) on or in vehicles, machinery, stored irrigation equipment, air monitoring stations and sheds (figures B.4.5, B.4.6, B.4.7). Fishing line in Lake Ladora drowned a Western grebe (*Aechmophorus occidentalis*) and broke a robin's leg that encountered it in a Lake Mary tree.

Incidents involving mammals varied, but were not numerous in FY 2011. A mule deer (*Odocoileus hemionus*) fawn was discovered dead of unknown causes on the ICS/D Street road in June. A sick fox squirrel (*Sciurus niger*) was seen around the trailers in early May and dead rabbits were reported in the vicinity of the Building 129 staircase in early July. Also in July, a dead coyote (*Canis latrans*) pup was found in the Basin A-neck well field. The well cover had been removed for servicing and the pup had jumped through the wiring and was snared (figure B.4.8).

The final wildlife conflict involved honey bees (*Apis mellifera*) that built a hive under the Building 129 breezeway in September. The honeycomb was not readily apparent and resembled a swarm. When they did not dissipate, beekeepers on the USFWS staff gave them an alternate hive to occupy and relocated them on the refuge (Figure B.4.9).

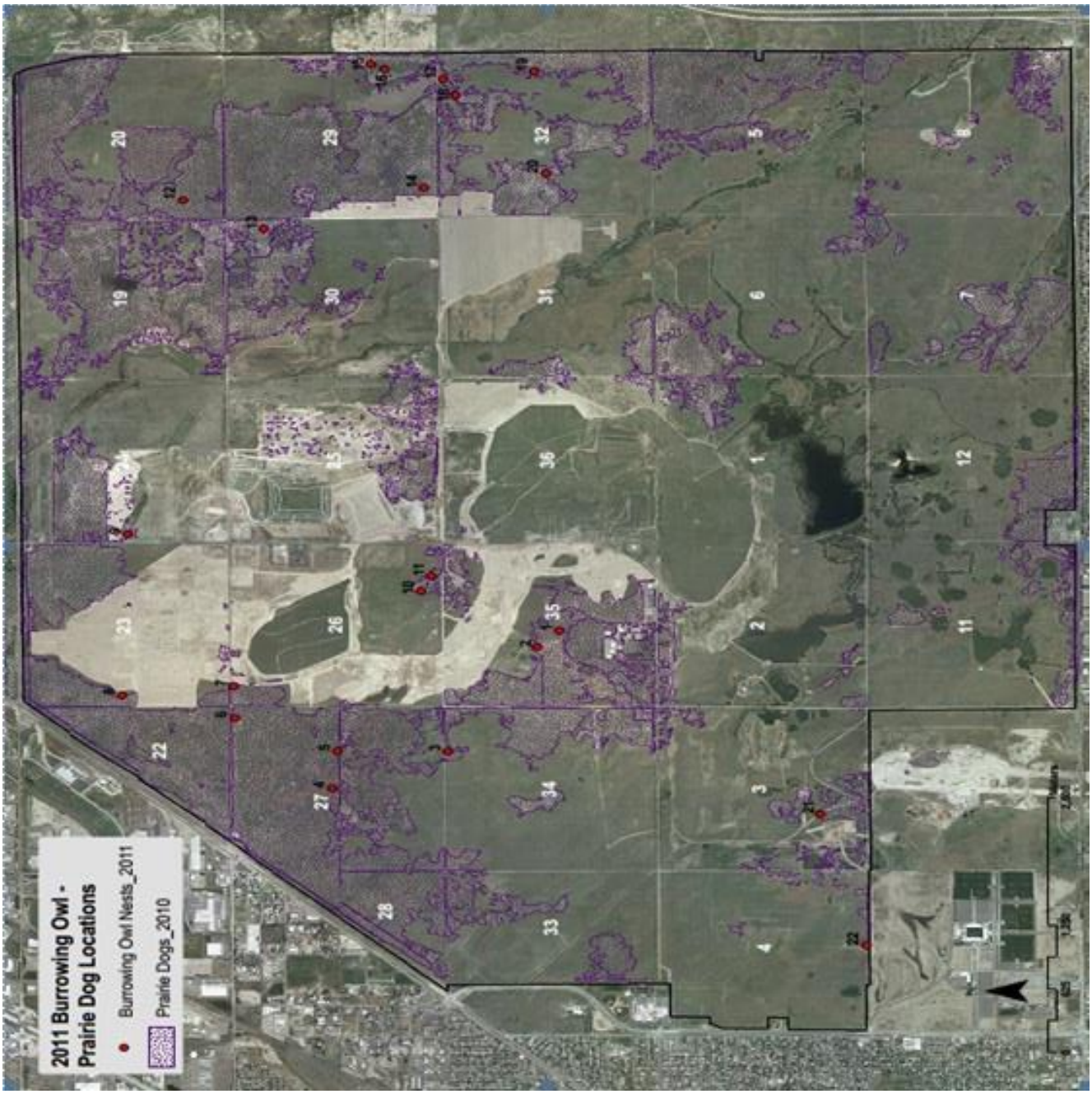

Figure B.4.1. FY 2011 Burrowing owl nest and prairie dog town locations, RMANWR.

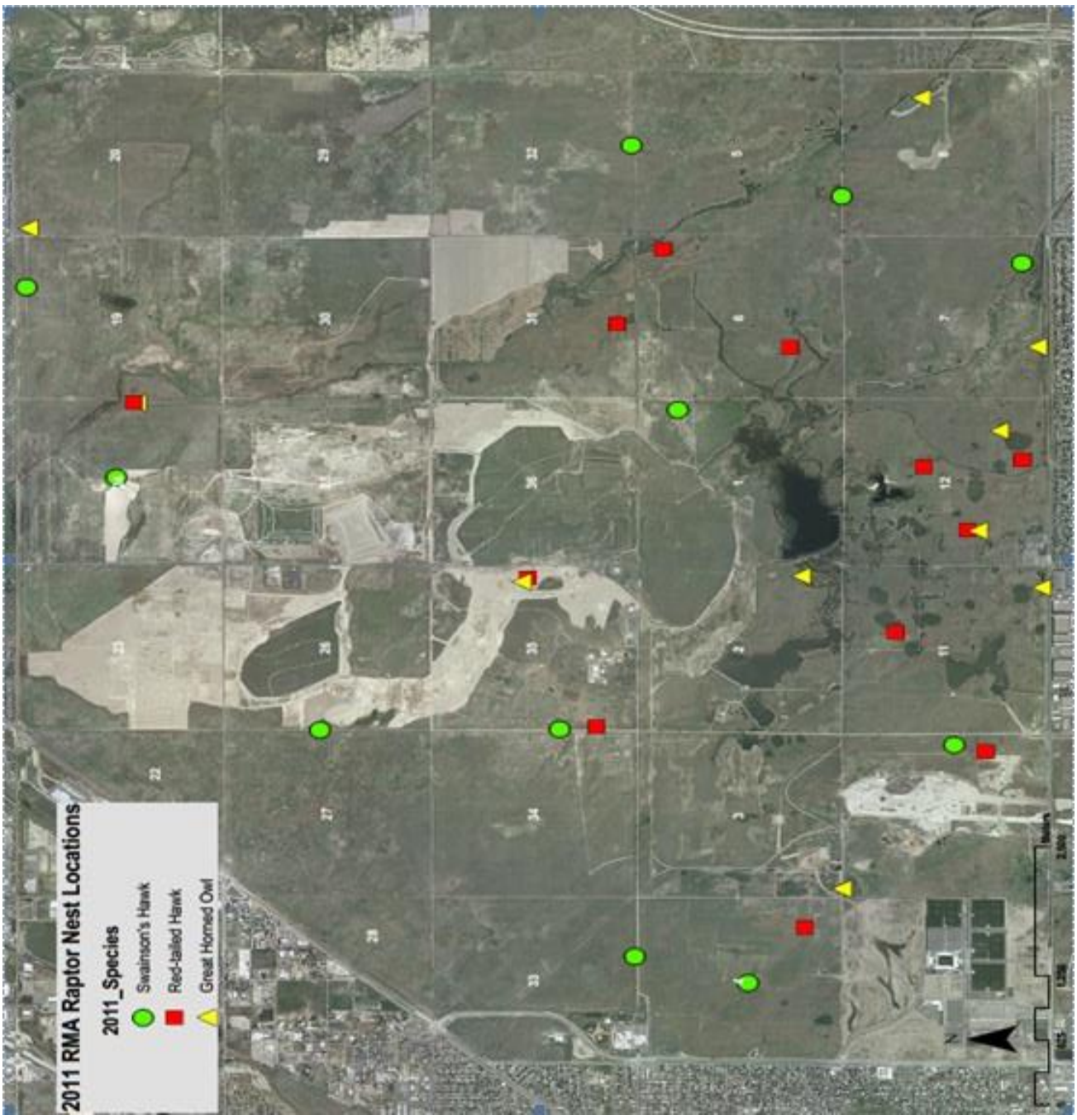

Figure B.4.2. FY 2011 RMA raptor nest locations, RMANWR.

Figure B.4.3. Osprey on 7th Avenue power pole, RMANWR.

Figure B.4.4. Swainson's hawks fledging, RMANWR.

Figure B.4.5. Robin nest on vehicle, RMANWR.

Figure B.4.6. Robin nest on equipment, RMANWR.

Figure B.4.7. Robin nest in shed, RMANWR.

Figure B.4.8. Coyote pup at Basin A neck, RMANWR.

Figure B.4.9. Beehive under the Building 129 breezeway, RMANWR.

B.5. Implementation of Bald Eagle Management Area Provisions to Ensure Protection of Federally Listed Species during Remedial Activities

B.5.a Bald Eagle Roost Counts

Bald eagles have utilized parts of the Rocky Mountain Arsenal as a winter communal roost since at least 1986. The Bald Eagle Management Area (BEMA) was established by USFWS for the Army in the early 1990's to allow clean up to continue while minimizing disturbance to loafing, feeding and roosting eagles. In FY 2008, the boundaries of the BEMA were reduced to the winter roost itself in southeast Section 1 from October 15 to April 15. (figure B.5.a.1). Eagle roosting was not affected, so the restricted area remained the same in FY 2011. A high of 47 eagles was counted on the roost on January 11, 2011. Survey results are summarized in Figure B.5.a.2.

In addition to the protection provided to wintering bald eagles by BEMA, a second exclusion zone was established to create a half mile buffer surrounding the Bald Eagle Nest Area (BENA) located in northwest Section 5. Restricted access is enforced from November 15 through July 31, adhering to federal and state guidelines. In FY 2011, the adult pair fledged one eaglet. Nesting activity is summarized in section B.5.b.1.

The administration of BEMA was coordinated through several means. A bulletin was posted on the Lotus Notes RMA Bulletin Board by the PMC. No updates were made to the map in FY 2011 (figure B.5.a.1). Routine changes were relayed to Jeff Krause after the termination of contractor meetings. In FY 2011, the only issue with compliance of the regulation came from the USFWS itself. For the majority of the winter, the construction of the new tour route road resulted in vehicle traffic within the nest buffer zone traveling on 7th and F Street. The eagle pair appeared to continue their regular nesting schedule.

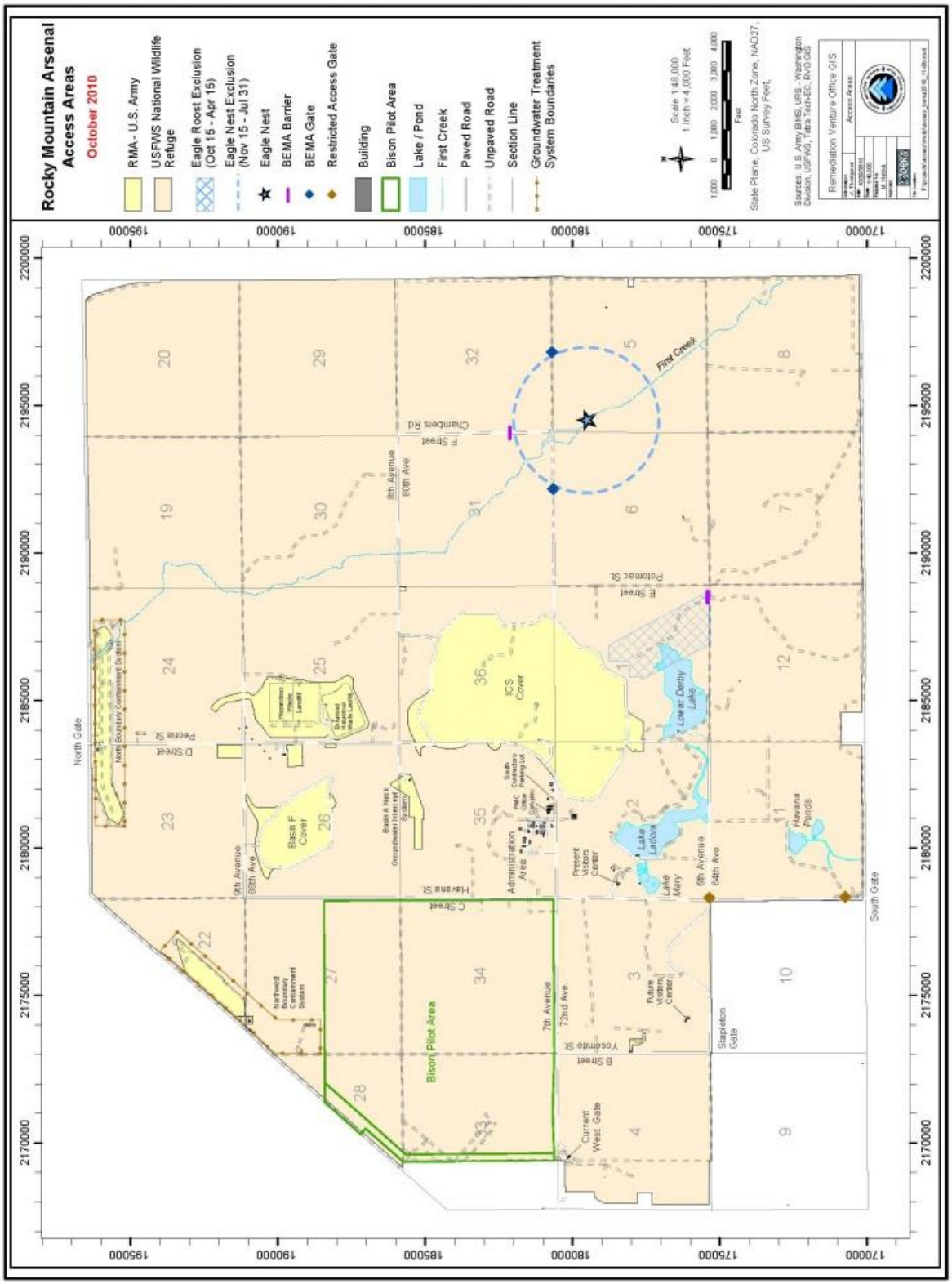

Figure B.5.a.1. FY 2011 Rocky Mountain Arsenal Access Areas map, RMANWR.

BEMA is implemented annually from October 15 to April 15. Roost counts from 1986 through 1999 were conducted every other night but were reduced to three times a week in 2000. Since 2002, roost counts have been done once a week in October and November and twice a week from December through April.

Specific single night roost count data from RMA are incorporated into two inclusive cooperative surveys, the Urban Denver Christmas bird count (January 1) coordinated by the Audubon Society and the Bald Eagle Midwinter Survey (the second Friday or Saturday of January) organized by the state natural resource agency, the Colorado Division of Wildlife (CDOW). In FY 2011, the number of eagles recorded (33 and 45 respectively), was slightly higher than the number observed in FY 2010. The patterns of eagle use at the refuge roost for these two specific count dates compared to the annual peaks for 1998-2010 are depicted in Figure B.5.a.2.

The highest number of eagles observed on a single roost count occurred in 1998 with a progressive decline through 2003, followed by a small peak in 2005 and the lowest count in the series occurring in 2008. The highest count of the FY 2011 season for a single night (47) occurred on January 11, with the second highest count (45) occurring on Jan 14. The highest average roost occupation (40.4, n=5) reverted to the first part of January, with the second highest average (38.5, n=4) in the second half of January (figure B.5.a.3). This represents a substantial increase as well as a temporal shift from FY 2010. Furthermore, roost numbers have not been this high since 2001. At least twice as many subadults as adults were counted throughout the survey. Their presence was evident as early as the beginning of December. Subadults are known to migrate earlier and go farther south than adults. They appeared to have done the prior at the refuge roost, but not the latter, choosing to stay in the metro area. No banded eagles were observed either at the nighttime roost or on the refuge during daylight hours. Roost count data was not requested from local state biologists in FY 2011 as it was in FY 2009 and FY 2010.

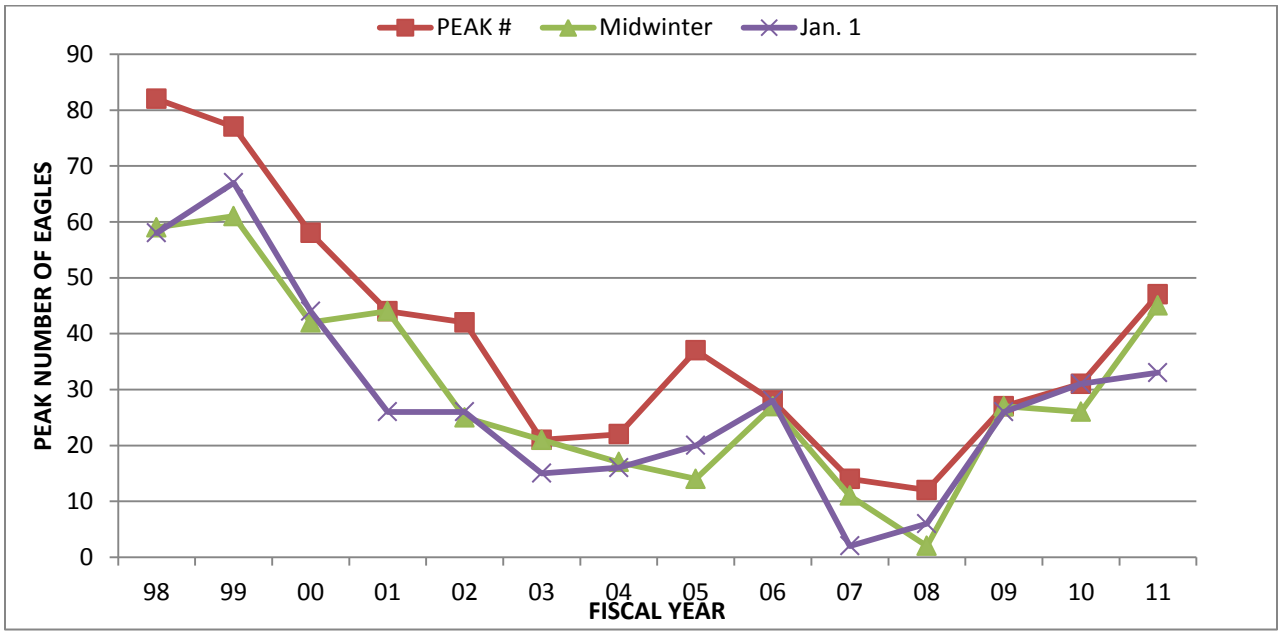

Figure B.5.a.2. Bald eagle roost counts on the Rocky Mountain Arsenal representing peak numbers and two counts in January, for the period, 1998-2011, RMANWR.

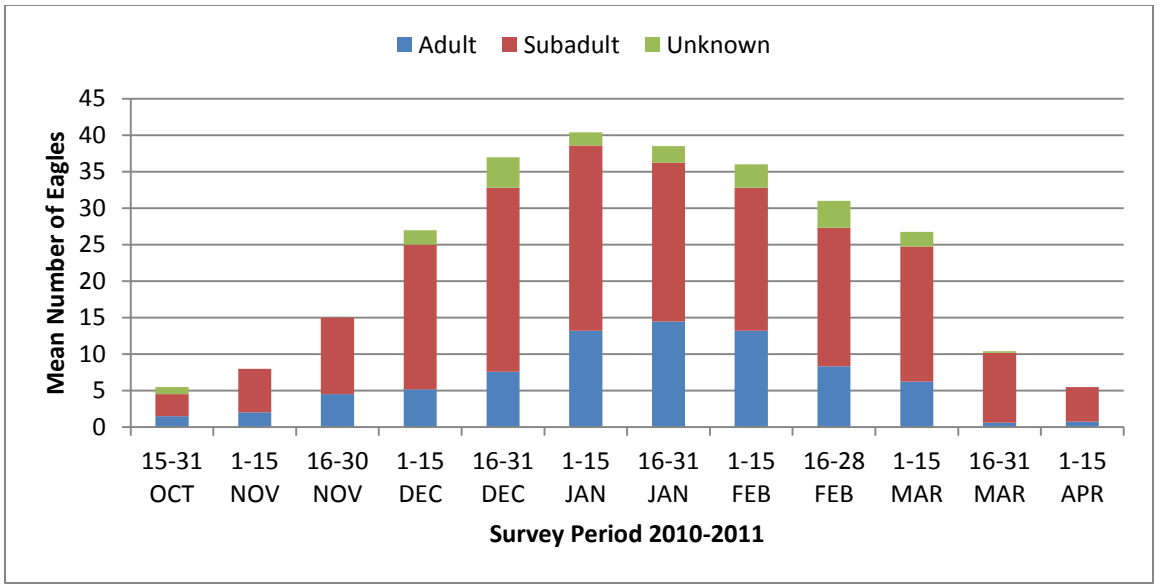

Figure B.5.a.3. Mean number of adult and subadult bald eagles at the communal roost on the Rocky Mountain Arsenal NWR from October 2010 through April 2011, RMANWR.

B.5.b Bald Eagle Nesting Activity.

In addition to the protection provided to wintering bald eagles by BEMA, a second exclusion zone, the Bald Eagle Nest Area (BENA), established a half-mile buffer surrounding the Bald Eagle Nest Area located in northwest Section 5 (Figure B.5.a.1). Restricted access is enforced from November 15 through July 31, adhering to federal and state guidelines.

The adult eagle pair periodically visited their nesting territory in November and December 2010, but typically joined other bald eagles at the nighttime roost throughout January. On February 7 and 25, the pair was seen at sunset adding material to the nest, but incubation was not documented until March 2. On March 17 and April 6, the nest was visited by an older subadult eagle that was violently chased from the area, once by the setting adult. Brooding was indicated on April 7 and feeding of one chick was observed on April 13. The single chick was finally seen in the nest bowl on April 21 and it fledged by June 30. The entire nesting sequence was later than usual and very similar to 2003.

The refuge eagle pair have successfully incubated sixteen eggs ($\bar{x}$ =1.6 per attempt) and fledged thirteen eaglets ($\bar{x}$ =1.3) in ten years. (Table B.5.b.1). Typically, a new pair will only lay one egg the first year (2002) and then produce two or possibly three thereafter. The two adults did not appear to be the original pair in 2005, (i.e. new to each other as mates) and appeared to hatch only one egg. The reasons for the single hatch and fledge in 2008 was not apparent, compared to the weather-related single fledges in 2003, 2007 and 2009, but may have resulted from disturbance (road building and heavy traffic) or natural disruptions (chasing other eagles from the nest).

Year	Nest Attention	Incubation Observed	Hatch Date	Hatch Total	Fledge Date	Fledge Total	Color Bands	Comments
2002	Unknown	Feb 23	Apr 6	1	Jun 24 – Jul 11	1		
2003	Unknown	Mar 3	Apr 7	2	Jul 2 – 7	1		Only 1 chick after May 10 storm
2004	Feb 9 – Feb 23	Feb 23	Mar 30	2	Jun 22	2	**Red** BM, BO	
2005	Jan 25 – Feb	Feb 19	Mar 27	1	Jun 20 – 27	1	**Red** CP	Found dead Jul 7
2006	Nov 2005 – Feb 13	Feb 15	Mar 20	2	Jun 15 – 26	2		
2007	Feb 9 – 14	Feb 20	Mar 27	2	Jun 18	1		Only 1 chick after Apr 24 storm
2008	Jan – Feb 19	Feb 21	Mar 28	1	Jun 12	1		
2009	Jan 15– Feb 18	Feb 19	Mar 30	2	Jun 24	1		Only 1 chick after Apr 21 storm
2010	Unknown	Feb 22	Mar 29	2	Jun	2		
2011	Feb 7 - 25	Mar 3	Apr 7	1	Jun 30	1		
TOTAL				**16**		**13**		

Table B.5.b.1. Summary information for the bald eagle nest on Rocky Mountain Arsenal NWR, 2002 -2011, RMANWR.

B.6. Program Management and Supervision and Service Input to RMA Committee and Council

B.6.a. Remedy Coordination Activities

RMA Committee and Council Support

U.S. Army funding to RMANWR in FY 2011 provided for a Remedy Coordinator (RC) senior staff position to coordinate ongoing RMA remedy and Refuge activities. A primary function of the RC was to provide Service and Refuge input as a member of the RMA Committee and to provide technical and policy support to the Refuge Manager in their role as a member of the RMA Council. During FY 2011, the Refuge RC participated in Pre-Committee Meetings with Remediation Venture Office (RVO) and Program Management Contractor (PMC) counterparts

to prepare for monthly RMA Committee Meetings. The RC attended and provided Refuge-relevant input at all monthly RMA Committee Meetings and participated with the Refuge Manager in all RMA Council Meetings, including four combined Committee/Council Meetings during FY 2011.

In FY 2011, a decision document from the Environmental Protection Agency agreed to Option A of the Off-Post Groundwater Notification Area which was an expansion of the notification area already in effect. This affected Sections 34, 35, 16 and 4 and was agreed to by the RMA Steering and Policy committee.

RVO Support Activities

The Refuge RC provided technical and program management support to the RVO as a member of the RMA Management Team to help coordinate all ongoing activities at RMA. The RC also provided RVO support as the immediate supervisor for the Refuge Health and Safety Officer who functioned as a member of the RVO Health and Safety Office (See section B.7, below). In addition, the RC participated with RVO senior managers as a member of the Award Fee Board (AFB) to evaluate the performance of the PMC in executing the RMA Remedy while protecting the RMA Refuge, during semi-annual appraisal periods. The RC attended and provided input at all AFB meetings in FY 2011, with emphasis on Award Fee Plan Category 8 for Refuge Protection.

Another RVO support function tasked to the RC was almost daily contact and communication with the PMC's Refuge Protection Coordinator and RVO and PMC Project Engineers to review and resolve ongoing remedy activities with potential adverse effects on wildlife and habitats, Refuge operations, Refuge visitors, or nearby communities in neighboring jurisdictions (e.g. Commerce City, DIA, Stapleton Development Corporation, City and County of Denver). A majority of these contacts in FY 2011 were related to issues affecting the Integrated Cover System (ICS), Basin F Cover System (BFCS), Hazardous Waste Landfill (HWL), and the Enhanced Landfill (ELF).

A significant, ongoing Remedy Support function assigned to the RC was coordinating and leading the RMA Surface Water Management Team (SWMT) (See section B.8.a). The RC helped charter the SWMT in FY 2000 and continued in FY 2011 to organize and chair monthly team meetings to plan and implement surface water management strategies and activities to assure an adequate water supply to meet Remedy and Refuge demands.

As in past years since FY 2002, the SWMT implemented the ***2009 RMA Surface Water Management Plan***. By executing this plan, the SWMT fully provided adequate water supplies to meet all Remedy water demands for dust control, compaction, and other construction needs plus irrigation water to support restoration of native short-grass and mixed-grass prairie of more than 700 acres of caps and covers on the ICS, BFCS and HWL. In addition, the RC coordinated discussions between the RVO and Denver Water representatives on plans by Denver Water to deliver Recycled Water to RMA under the Permanent Water provisions of the *2008 Nonpotable Water Lease Agreement for RMA* (2008 Agreement). The U.S. (Army and the Service) has a perpetual contract right with the Denver Water Board (DWB) for up to 700 acre feet of recycled water per year beginning October 2011 when Recycled Water delivery to RMA becomes

available from a Denver Water main pipeline (Conduit 302) to be constructed along 56th Avenue. When Recycled Water becomes available to RMA, the availability of up to 800 acre-feet of Denver Treated Water (tapwater) for dechlorination and discharge into Lake Ladora is terminated under the 2008 Agreement. Two taps were completed by the end of October 2011 (in FY 2012).

The SWMT also provided coordination between the RVO and the PMC on operation of the Section 4 Groundwater Production Wells, the operation of inflows and outflows to and from the RMA lakes (Ladora, Lower Derby and Mary), and monthly water accounting reports to the Colorado State Engineer required by the Substitute Water Supply Plan for the Section 4 Wells. The SWMT also coordinated proper augmentation water delivery to the South Platte River to make up for depletions to the river caused by pumping tributary groundwater from the Section 4 Wells. In addition, the RC and members of the SWMT coordinated monthly reports to the Denver Water Billing Department on volumes of Denver Treated Water (potable water) used at RMA for non-potable purposes, to assure accurate billing by Denver Water to the U.S. Army for Treated Water consumed at RMA as potable water.

One other RVO support function provided by the RC was RVO coordination on final transfer of administrative jurisdiction for the dams at RMA from the U.S. Army to the Service. During FY 2011, the RC updated a strategy approved by the Mountain and Prairie Region of the Service to defer transfer of Federal jurisdiction for the RMA dams from the Army until FY 2011. The RC also continued coordination with the Urban Drainage and Flood Control District (UDFCD) and the City and County of Denver (CCD) on their plans to rehabilitate the embankment of the Havana Ponds Dam. Jurisdiction for this dam was transferred to the Service by the Army in 2004. UDFCD and CCD have joint responsibility for perpetual maintenance of this dam to meet Colorado Safety of Existing Dams standards under provisions of a 2007 Inter-Governmental Agreement for Irondale Gulch Stormwater Management among UDFCD, CCD and the Service.

A final RC support function for the RVO was coordinating transition of RMA infrastructure currently owned and operated by the U.S. Army, to a "final" state with limited future operation and maintenance funding. During FY 2011, this transition support continued to focus on assisting the RVO and the PMC to flesh out details of an RMA Utilities and Infrastructure Improvement Plan (UIIP) tasked to the PMC in spring 2009. The UIIP addresses RMA utilities and related infrastructure including potable water, electrical distribution, sewage, natural gas supply, communications and buildings and grounds.

B.7 RMA Health and Safety Program Support FY 2011

B.7.a RVO Health and Safety Office Participation

In FY 2011, the U.S. Army continued funding to the RMANWR for a full-time Refuge Safety Officer (RSO) position to participate as a partner in support of the RVO Health and Safety Office (HSO) with counterparts from the Army and Shell Oil Company (represented by URS). The HSO is a team tasked with leading and promoting a safety culture at RMA where safety is everyone's responsibility. The HSO team provided continued support in FY 2011 for the Occupational Safety and Health Administration's (OSHA) Voluntary Protection Program (VPP), Star status recognition of RMA safety programs of the U.S. Army, URS, and Tetra Tech EC, Inc.

(PMC). Participation by the RSO in the HSO partnership contributed directly to the VPP achievements by all RMA organizations in FY 2011 by promoting worker commitment to increased Zero Incident Performance site wide.

As part of HSO responsibilities, the RSO participated in organizing and leading a number of activities including RVO Safety Steering Committee Meetings, RVO Senior Management Team Safety Walks, RMA Safety Incident Review Committee Meetings, periodic RVO health and safety inspections of RMA facilities and operations, and HSO preparations for periodic RCRA inspections of RMA by the State of Colorado. The RSO also participated in quarterly meetings with the Army Program Management Contractor on safety programs sponsored by the PMC and in weekly RMA Management Team Meetings sponsored by the RVO Senior Management Group. The RSO effectively performed daily coordination and communication among all HSO counterparts and safety professionals site-wide. The RSO also assisted HSO counterparts in preparing monthly and semi-annual safety performance evaluations as a safety technical representative for the PMC and related monthly and semi-annual reports for each Award Fee Appraisal Period in FY 2011.

B.7.b Specific Safety Program Activities

To promote a safety culture among RMA Refuge staff, the RSO coordinated the distribution and periodic updates for health and safety information provided to Refuge staff electronically (email) or via hardcopy, as well as health and safety information posted on Refuge bulletin boards. The RSO also provided daily safety topics to staff members as part of safety awareness and also assisted Refuge supervisors and Refuge staff in updating Job Hazard Analyses (JHA's) when needed for common and recurring jobs or tasks performed on the Refuge. All JHA's were consistent with the format and content requirements contained in the Service Manual. JHA's provide an important basis for job hazard review during Tailgate Safety Meetings required at the beginning of each work day for all Refuge activities and operations. The RSO also participated in numerous PMC and Refuge Tailgate Safety Meetings during FY 2011.

Occupational Safety and Health training for Refuge staff was critical in maintaining an effective running safety culture. As a result, the RSO coordinated with other site-wide agencies to help sponsor a wide range of safety training for Refuge staff during FY 2011. Training conducted was eight-hour OSHA recertification training requirements for Refuge personnel working directly in or near Army retained remediation areas. The Refuge had certification or recertification training requirements for refuge personnel in CPR, First Aid, and AED, and Hazard Communications and RCRA Waste Management training for Refuge personnel handling or managing hazardous wastes. The RSO coordinated annual fire extinguisher refresher training. The RSO helped coordinate with supervisors and Regional trainers on refresher training for Refuge staff operating heavy equipment, small motorized vehicles (four wheelers) and power tools (e.g. chainsaws).

The RSO contracted with an outside medical agency to administer annual influenza vaccinations for Refuge and Army personnel at no cost to interested employees. The RSO was also prepared to coordinate appropriate diagnostic and medical treatment for any Refuge personnel injured on the job or exposed to hazardous materials or environmental hazards such as blood borne or vector borne pathogens, including disease agents transmissible from wildlife to humans. The

RSO was also prepared to assist Refuge personnel in filing and processing valid Workman's Compensation Claims with the U.S. Department of Labor in coordination with the U.S. Department of the Interior.

During Calendar Year 2011, Refuge staff logged 33,530 RMA Remedy-related work hours with **zero** recordable injury cases and **zero** days away from work cases. These results were incorporated into the overall safety and occupational health statistics reported by the RVO for the entire RMA Remedy workforce.

B.7.c Other RSO Responsibilities/Activities

The RSO served as a Refuge point of contact and source of approval and had the responsibility for overall coordination of, and safety compliance by, third parties proposing work on RMA. This included work for the Refuge, the National Wildlife and Eagle Property Repository, utilities operation and maintenance on Refuge facilities or lands, and work proposed on RMA within an easement granted to outside organizations for utilities, transportation, drainage or other purposes.

The RSO served as a member of the RVO Site-wide Infrastructure Transition Team to help coordinate ongoing and future management of all RMA infrastructure assets such as structures, roads, utilities, dams, etc. The Refuge Safety Officer's institutional knowledge and diverse experience with RMA infrastructure was invaluable to the Infrastructure Transition Team in resolving the transition of RMA infrastructure from an Army owned site to a National Wildlife Refuge. In FY 2011, the number and complexity of infrastructure and utility-related transition issues handled by the Infrastructure Team increased significantly because the RMA Remedy projects were nearing completion and RMANWR jurisdiction and responsibilities were increasing.

The RSO was also responsible for coordinating and managing daily staffing of the south gate entrance with personnel from the Service and Army during normal workdays and special events in order to maintain a secure access control point for authorized visitors during the final stages of Army remedy related projects. During FY 2011, the RSO not only managed gate staff personnel under the USFWS but also two employees assigned from the Army staff. All employees working under the direction of the RSO provided 100% of required Gate Guard coverage on the South Gate during normal business hours.

A final responsibility of the RSO was to provide technical and program evaluation of the PMC's performance under Category 8 Refuge Protection of the Incentive Award Fee Plan, serving as a Contracting Officer's Technical Representative (TR) to the U.S. Army's Contracting Officer. In this role, the RSO prepared monthly and semi-annual reports of the PMC's performance under three subcategories of Refuge Protection including Natural Resource Sensitivity, Activities Coordination/Environmental Protection, and Public Access Coordination. The RSO also attended monthly RVO TR Meetings to review PMC progress in achieving overall award fee objectives jointly developed with the RVO. During FY 2011, the RSO completed all monthly and semi-annual TR reports on time and participated in all TR meetings.

B.8. Participation in RVO Teams Working on Issues of Mutual Concern

B.8.a. Surface Water Management Team

During FY 2011, the RMA Refuge Remedy Coordinator continued to chair the RMA Surface Water Management Team (SWMT), charged with responsibilities for managing overall surface water supplies at RMA to meet annual and long-term Remedy and Refuge requirements. Team members included RVO personnel from the U.S. Army, URS, RMANWR, and the U.S. Geological Survey, plus Engineering and Program Support personnel from the PMC. The SWMT first met monthly, then quarterly during FY 2011 with a meeting schedule and agenda topics developed by the team members and distributed by the Remedy Coordinator. Also, the SWMT finalized the 2009 Surface Water Management Plan for RMA to ensure that water supplies would meet or exceed anticipated demands into the future.

One of the most significant accomplishments of the SWMT in FY 2011 was successful management of RMA water supplies to meet RMA water demands for remedy-related construction (dust control, compaction, and conditioning) and irrigation, plus RVO requirements for lake level management to support healthy aquatic ecosystems. Lake level management, coordinated by the SWMT, contributed to successful operation of the catch-and-release public fishing program sponsored by RMANWR in Lakes Ladora and Mary from mid-April to mid-October. This also included providing Wetlands 3, 4, and 5, as well as the Rod and Gun club, with supplemental non-potable water from the Denver recycled water distribution pipeline that was completed in early FY 2011. Approximately 204 acre feet were needed to completely fill these areas, which was scheduled to be done in May and September.

In FY 2011, the SWMT continued to implement the 2008 RMA Nonpotable Water Lease Agreement with the Denver Water Board that provides up to 800 acre feet per year of Denver tap water for dechlorination and discharge into Lake Ladora to replace historical delivery of nonpotable water. RMA developed plans for a 16" high density polyethylene buried pipeline extension from tap 1 to deliver the water to the lakes. Under the agreement, RMA is responsible under the National Pollutant Discharge Elimination System (NPDES) compliance requirements related to discharge of Denver recycled water.

The Surface Water Management Team was dissolved in late FY 2011 as the responsibilities that were performed by this group were transferred to the U.S. Fish and Wildlife Service. This is the final time this section will appear in the annual report.

B.8.b. Rocky Mountain Arsenal Cultural Resources Management Team

The Rocky Mountain Arsenal National Wildlife Refuge (Refuge) actively participated in monthly meetings and related actions of the Cultural Resources Management Team (CRMT) to assure site-wide Remediation Venture Office (RVO) compliance with provisions of the National Historic Preservation Act (NHPA), the Antiquities Act, the Native American Graves Protection and Repatriation Act, and related Federal regulations. U.S. Fish and Wildlife Service (Service) representation on the CRMT included a regular team of members from the Habitat section and the Deputy Refuge Manager. CRMT activities during 2011 focused on continued implementation of the RMA Integrated Cultural Resources Management Plan (ICRMP) developed in 1994 and subsequently approved by the Colorado State Historic Preservation

Officer (SHPO). CRMT reported isolated cultural resource site locations found during field checks to Colorado SHPO as required by Federal regulation. In addition, the CRMT continued to manage curation of significant cultural resources recovered from South Plants, North Plants, Building 111 and other Refuge sites.

In FY 2011, the CRMT continued work started in 2008 on a Renovation Plan for the Egli house to restore the structure to its original condition to allow the Service to provide future historical interpretation opportunities of the Egli family farm for Refuge visitors. In FY 2010, Friends of the Front Range Wildlife Refuges submitted a grant requesting funds to the Colorado State Historical Fund for restoration of the house, which was declined.

Due to conscientious attention to detail and solid follow-through by the CRMT in regular reporting to the SHPO of cultural resource finds at the Refuge, remedy projects experienced a record-setting **zero work delays** related to cultural resource finds at remedy work sites. Based on the scale and distribution (horizontal and vertical) of Refuge sites necessarily disturbed by the remedy project, this track record of no work stoppages has set a 14-year track record for others to follow at other construction projects.

Cultural Resource Activities – U.S. Fish and Wildlife Service

During the period of 1 October 2010 – 30 September 2011, compliance with the *National Historic Preservation Act of 1966* was achieved primarily by management of the Refuge under the provisions of a Programmatic Agreement (PA) with the Advisory Council on Historic Preservation (ACHP), which was originally signed in November 1998. During FY 2009, a draft of new PA (designed to reflect changes in land ownership and federal agency responsibilities that have occurred since 1998) was prepared for review by the Colorado SHPO. Pending review and revision, the ACHP will be invited to participate in further development of the new PA in accordance with 36 CFR 800.

On 1 May 2011, an annual report was prepared for the ACHP and the Colorado SHPO on implementation of the terms of the existing PA during the preceding 12-month period, as required by the PA.

The terms of the existing PA are implemented in accordance with an ICRMP, which was originally prepared in October 1999. Throughout FY 2010, a revised ICRMP (approved during FY07) was consulted for cultural resources management at the Refuge.

Annual monitoring of historic properties found on the Refuge was in accordance with a stipulation in the PA (in the case of the prehistoric sites) and a separate Memoranda of Agreement (MOA) with the Colorado SHPO (in the case of the other properties) by a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualifications Standards* for archaeologists. 2011 field monitoring included:

5AM.185 (T2S R66W, Section 19 NW ¼): This site is located on the crest of Henderson Hill and contains at least two buried prehistoric components (Middle Archaic and Middle Ceramic periods). 5AM.185 occupies an estimated area of 7.45 acres. In 1997, impacts to 5AM.185 caused by past gravel quarrying, road construction, vehicle operation, and unauthorized collection of artifacts were

reported to the Colorado SHPO. However, restriction of access and activities at the site since 1998 has eliminated these impacts, and permitted revegetation of most formerly exposed surfaces. During the 2006 monitoring visit, it was observed that the site remains in improved and stable condition, and there was no evidence of erosion or new impacts in 2011.

5AM.718 (T2S R66W, Section 20 NE ¼): This site is located on an unnamed hill over-looking Second Creek, and contains at least two buried prehistoric components (Archaic and Ceramic periods). The site occupies an estimated area of more than 8 acres (new areas of the site were mapped in 2003 and reported to the Colorado SHPO). In 1997, impacts caused by road construction on the eastern margin of the site were reported to the Colorado SHPO. The scarcity of artifacts observed here during monitoring visits conducted over the years since 2000 indicate that the 1997 assessment that "the site had been subject to significant damage" may have been incorrect. During the monitoring visit, no artifacts were observed eroding out of the slope on the east margin of the site. Erosion of this slope has not been affected by the presence of the road, which lies further east. In general, the site is in good and stable condition.

5AM.1463 (T2S, R66W, Section 19 SE ¼): This site contains three buried concrete vaults constructed by the U.S. Air Force during the 1960s, reportedly for monitoring of foreign nuclear tests. The vaults are arranged in an extended triangle that occupies an area of roughly 0.2 acres. Each vault is cylindrical in form and measures approximately 5 ft. in diameter and 5 ½ feet in depth from the surface. In 2000, the vault complex was determined eligible for the NRHP in consultation with the Colorado SHPO, and a MOA was established for their treatment. The PMRMA placed a protective cover over the entrance of each vault in 2004.

5AM.1145 (T3S, R67W, Section 2 NW ¼,): This site contains the Egli house and garage. The site was re-evaluated for NRHP eligibility by the PMRMA in January 2001. The Colorado SHPO concurred with the determination that the site was eligible for inclusion in the NRHP on the basis of criterion A of 36 CFR 60.4. In August 2002, the site was listed on the *Colorado State Register of Historic Properties*. The Egli house and garage are the only remaining pre-World War II buildings on RMA; they were constructed in 1910-1911 and inhabited by the Egli family until acquisition of property by the U.S. Army in 1942. In 2003, the Rocky Mountain Arsenal Wildlife Society undertook a historic structure assessment of the property with assistance from the PMRMA. The PMRMA signed an MOA in November 2005 for treatment of the Egli house and garage, which will be part of the Rocky Mountain Arsenal National Wildlife Refuge by the U.S. Fish and Wildlife Service.

5AM.1208 (T3S R66W, Section 6 SW ¼): This site contains the only remaining structure of the Munitions Storage Historic District, bunker Building 884. During the FY 2010 monitoring visit, it was observed that the roof (constructed in 1972) of the bunker was deteriorating and required some stabilization and repair. The roof was replaced in October 2010 with Army funds. In April, cultural resource team members noticed that due to the new roof, erosion was occurring due to poor drainage off the roof. FWS fixed the drainage problem by adding long irrigation pipe to redirect water. Issues with the bunker were no longer observed in FY 2011.

5AM.261 (T3S R66W, Section 7): This site contains the Lateral A of the High Line Canal and has been determined eligible for the NRHP.

Prehistoric and historic artifacts were accessioned and curated in a collections center that is maintained on the Refuge in accordance with 36 CFR 79 under the terms of the PA. During FY 2011, artifacts were accessioned and catalogued in the RMA collections center, primarily to address a backlog of items that had accumulated during and prior to FY 2008.

The Service continues to work closely with the RVO CRMT, which includes representation from Planning and Habitat section staff. Throughout FY 2011, the CRMT met on a regular basis (at least once every 60 days) to review the progress of PA implementation and to address issues and problems in cultural resources management at the Refuge.

During FY 2011, the Refuge continued to meet compliance requirements of the NHPA and other federal and state laws and regulations regarding historic preservation and cultural resources. Compliance with the NHPA will be achieved through implementation of the existing PA, until such time as the new PA is signed and implemented. The new PA will contain most of the same stipulations as the existing PA.

B.9. Direct Administrative Support of Service Staff

B.9.a. Narrative of Activities

Implementation of Business Team Units for Refuges in Region 6 began October 1, 2009. As in FY 2010, Ruby Rodriguez was assigned as a Time Keeper and HR Specialist and Annette Ursini was assigned as a Budget Specialist. Ruby assisted Rocky Mountain Arsenal, Arapaho, Browns Park, Flint Hills, Kirwin, Marais des Cygnes, and San Luis Valley. Annette Ursini was assigned budget duties for Rocky Mountain Arsenal and Arapaho NWR.

Administration

- A planning team meeting was held, to discuss potential projects.
- There was an administration and station review performed in August 2011 by the regional office.
- This was the last year using FFS, the Department of the Interior is converting to FBMS. Offices were authorized to prepay utilities and recurring bills through December due to the implementation of FBMS in FY 2012
- There was a temporary 2%, decrease in the Social Security Employee Tax Rate during Calendar Year 2011.
- A Federal Employee pay freeze was approved and implemented in January 2011.
- No IT personnel had Administrative Rights for RMANWR. Volunteers will need an Active directory logon when they use a computer.
- The north gate closed permanently on December 10, 2010 and the south gate was closed in May of 2011.
- Dan Clark from facilities management conducted a Comprehensive Condition Assessment beginning in November 2010, and over the course of 2 weeks, examined real property for all 3 refuges in the Rock Mountain Arsenal complex. This is done to ground truth all assets and gathers an accurate account of all inventories at these sites.

Personnel

- Barboza, David-Biological Science Technichian, STEP; GS-404-4; EOD 5/16/11
- Berendzen, Steve-Project Leader, Perm GS-485-14
- Beres, Seth-Outdoor Recreation Planner; Perm, GS-023-9
- Bland, Cassandra-Park Ranger, Perm, GS-025-7
- Briggs, William-Fire Management Officer, Perm, GS-401-11–transfer to Forest Service 2/12/11
- Bunker, Michael-Tractor Operator, Seasonal, WG-5705-5; EOD 4/24/11
- Cable, Kayla-Park Ranger, STEP, GS-404-3
- Carmody, Peter-Biological Science Technician, STEP, GS-404-4; EOD 1/16/11, resigned 5/5/2011
- Colvin, Joel-Biological Science Technician, Term, GS-404-7
- Davis, John-Biological Science Technician, STEP, GS-404-5–promotion from GS4 to GS5 on 6/5/2011
- Dimarco, Chris-Biological Science Technician, STEP, GS-404-5; resigned 4/27/2011
- Drobniak, Susan-Park Ranger, Perm, GS-025-9
- Duffy, Mathew-Range technician, seasonal, GS-455-5; EOD 5/9/11
- Erickson, Wyndie-Biological Science Technician, STEP, GS-404-4; appointment expired 7/31/11
- Fairchild, Brian-Biological Science Technician, STEP, GS-404-5; promotion from GS4 to GS5 on 6/19/11
- Fallon, Jason-Supervisory Range Technician, Perm, GS-455-7
- Fallon, Jared-Tractor Operator, WG5705-5, EOD 4/24/11
- Fernandez, Ben-Tractor Operator, term, WG-5705-6
- Fernandez, Jesse-Laborer, STEP, WG-3502-2; promotion from WG2 to WG3 on 7/17/11
- Franzen, Chad-Biological Science Technician, STEP, GS-404-4; appointment expired 12/18/10
- Garcia, Ralph-Tractor Operator, seasonal, WG-5705-5; EOD 4/24/11
- Goncalves-Chambers, Lisa-Park Ranger, perm, GS-025-9
- Graff, Kendra-Range Technician Fire, seasonal, GS-455-4; EOD 4/13/11
- Hannan, Mia-Biological Science Technician, Term, GS-404-7
- Hastings, Bruce-Deputy Refuge Manager, Perm, GS-485-13
- Hetrick, Mindy-Fish and Wildlife Biologist, Perm, GS-401-11
- Jackson, Tom-Supervisory Fish and Wildlife Biologist, Perm, GS-401-13
- James, Sherry-Supervisory Park Ranger, Perm, GS-025-12
- Kincaid, Zach-Law Enforcement Park Ranger, Perm, GL-025-9
- Kirkpatrick, Nickolas-Laborer, STEP, WG-3502-3; EOD 3/21/11
- Kutosky, William-Biological Science Technician, Term, GS-404-7
- Lehan, Alessandra-Park Ranger, STEP, GS-025-3; EOD 6/5/11; resigned 8/14/11
- Lindgren, Kevin-Telecommunication Specialist, Perm, GS-391-11
- Logan, Scott-Emergency hire, Security Guard, GS-085-4; EOD 12/1/10
    - Security Guard, seasonal, GS-085-4; EOD 1/30/11
    - Tractor Operator, seasonal, WG-5705-5; EOD 5/8/11
- Mayhew, Robert-Office Assistant, Term, GS-303-5; EOD 1/25/11, terminated 6/27/11

- Morehouse, Jerry-Security Guard, GS-085-4; Retired 5/31/11
- Murray, Leeland-Biological Science Aid, STEP, GS-404-3; appointment expired
- Park, Michael-Park Ranger, STEP, GS-025-3; EOD 6/5/11
- Port, Jamie-Biological Science Technician, seasonal, GS-404-7;
- Quayle, Scott-Biological Science Technician, seasonal, GS-404-5
- Rafferty, Daniel-Park Ranger, Perm, GS-025-5; EOD 2/13/11; resigned 6/7/11
- Rodriguez, Ruby-Administrative Support Assistant, Perm; GS-303-7
- Ronning, Tom-Wildlife Refuge Specialist, perm, GS-485-11
- Schnaderbeck, Alex-Park Ranger, STEP, GS-025-4; Promotion from GS3
- Skipper, Sherry-Fish and Wildlife Biologist, Perm, GS-401-12; transferred to Region 9 on 12/4/10
- Smith, Stephen-Highway Engineer; Perm, GS-810-12
- Tagliente, Edward-Park Ranger, Perm, GS-025-7
- Stone, Brianna-Park Ranger, STEP, GS-025-3
- Taylor, Jennifer-Fish and Wildlife Biologist (GIS), Term, GS-404-9
- Thomas, Matt-Park Ranger, STEP, GS-025-3; transferred to National Elk Refuge 5/2011
- Turner, Seanacie-Park Ranger, STEP, GS-025-5;
- Ursini, Annette-Administrative Officer, Perm, GS-341-9
- Van Dreese, Melissa-Education Specialist, Perm, GS-1701-11
- Whiteaker, Scott-Biological Science Technician, term, GS-404-7
- Wright, Abby-Park Ranger, STEP, GS-025-4; Promotion from GS3 on 6/5/11
- Wright, Molly-Range Technician, seasonal, GS-455-4; resigned 9/1/11
- Wright, Terry-Supervisory Rangeland Management Specialist, Perm, GS-454-12
- Yotter, Bailey-Biological Science Technician, seasonal, GS-404-4
- Young, Chris-Safety and Occupational Health Manager, Perm, GS-018-12

Property received

- Network Server and two external hard drives;
- Changed 30 computer property numbers to controlled numbers, due to new guidance from Washington.
- 16 passenger shuttle bus, I485616 (698787) received November 2010
- Analytical Balance with calibration weights
- 2011 Ford F550, crew cab, 4x4 for Fire Program; 698801, received Feb 2011
- Pentax camera (6) for Cameras in Action program
- 1983 Boston Whaler Boat; 624855; Transfer from Upper Souris NWR in March 2011
- 1994 Johnson 25 hp Outboard Motor; 625000; Transfer from Upper Souris NWR In March 2011
- 1984 Shoreline Boat Trailer; 624872; Transfer from Upper Souris NWR in March 2011
- Point-of-Sale Computer Cash Register for VC Bookstore, including QuickBooks
- Merchandise Refrigerator for VC Bookstore; 699811
- Dell computers, 6; monitors 5; and 1 laptop
- Panasonic Flat Screen TV for bunkhouse; 699615
- Refrigerator; microwave, dishwasher for new VC
- Canon IRC 5035 Color Copier for Building 121; 699616

- Genisys OTC Scanner; 699617 – (6/2011)
- Loadmax trailer that was procured in FY10, received 10/4/2010.
- Titan gooseneck trailer, gooseneck; 699618 – (6/2011); Traded in Donohue Equipment Trailer; 657977
- Frontier Root Grapple Loader Attachment; 699619 upgrade
- Benjamin Air Rifle Firearm, .177 caliber; and .25 caliber
- Milwaukee Drill Press; 699622
- Bobcat Auger Drive Attachment, w/ mounting frame; 699623
- Installed electronics in Law Enforcement vehicle for $6,884.

Property Deleted

- GE & Whirlpool Refrigerators, donated to Metro State College
- 2001 Dodge Ram 2500 Pickup; 664123 (11/2010); Transferred to Browns Park NWR
- ATN Night Vision Scope; R6921 (11/2010); Transferred to Quivira NWR
- John Deere Gator; 673726 (11/2010); Trade-in for Bobcat 3450 Utility Vehicle
- Blackberry Cell Phone; (2/2011); Lost while in travel status
- Destroyed/recycled many pieces of office & electronic equipment including software
- Centrifuge, two Incubators, and Laboratory Hood Vent all sold through GSA Auctions
- Destroyed 12 pieces of outdated Laboratory equipment
- Office Desk; (4/2011); Sent to GSA Excess
- Point-of-Sale Computer Cash Register for VC Bookstore; Returned to Vendor
- 1994 John Deere Posthole Auger **and** 1994 John Deere backhoe attachment; #673360 & 673376 (6/2011); Trade in on Frontier Root Grapple Loader Attachment; 699619 upgrade
- Transferred 15 pieces of field and office equipment; (6/2011)
- Donohue Equipment Trailer; 657977 (6/2011); Trade-in for Titan Stock Trailer, gooseneck
- 2001 Ford F350, Chassis for Type 6 Fire Engine; I-273784, sold at GSA Auction
- Hotsy Pressure Washer, trailer mounted; 657984, transferred to San Luis Valley NWR
- Broyhill Tank Spray Trailer; (9/2011); Transferred to Kirwin NWR

Projects: 2011 Accomplishment Report

- Service personnel and volunteers constructed the Legacy Trail from the new Visitor Center to the Contact Station area. Approximate length is 1 mile at a cost of $74,337.
- Service personnel began construction of fencing in the new bison pasture in Sections 3 and 4. This will be completed in 2012, which will allow viewing of the bison from the new Visitor Center. Continued work on the bison corral.
- Trailer Z84 was transferred from Army to FWS to serve as our second Bunkhouse.
- Constructed the new entrance road with electronic gate at 6550 Gateway Rd. Contracted cost was $203,211.
- Completed computer network transition from Army to FWS.
- USFWS staff completed weatherization of Buildings 120 and 121 which included new thresholds on exterior doors and caulking of windows. Repaired gutters in Building 120 and drain sprouts for Building 121. Repaired roof leak in Building 383 and two furnaces.
- Procurement of the Dechlorination building began with Sky Blue Builders.

- Made energy improvements by installing photo electric and motion detectors on exterior lighting on Buildings 120, 121, 180, and 181 at a cost of $4,480.
- Contracted with HJW Engineering Consultants to do roof inspections on Buildings 112, 120, 121, 124, 383 & the Egli farmhouse. The results of the inspections will be used in scheduling future roof repairs or replacement. Buildings 120, 383 & the Egli House are the most critical. Roof repairs were made to Building 120 at a cost of $4,500.00.
- The Army installed, at their cost, backflow prevention devices to protect the potable water system in Buildings 120, 121 and 124.
- Contracted for mezzanines in the butler and seed buildings, and skylights in the Butler Building. This required a major cleaning and reorganization of items stored in building.
- As Visitor Services moved from trailer Z80 to the new Visitor Center, construction trailers were leased to facilitate the move.
- The first refuge roundup for the refuge bison herd took place on October 26th, 2010.

Funding

This was the last year of the current cooperative agreement. Roger Hildreth and Steve Berendzen are working on a new version. Army continued to fund U.S. Fish and Wildlife Service with reimbursable funding citing the Economy Act, keeping the overhead rate at 17%

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Cleanup/Remedy Funded	61170-1790-6004	$760,500
	Returned	($125,775)
	Total.....	**$634,725**
Mitigation/restoration Funded	61170-1790-6005	$1,544,500
	Returned	($52,000)
	Total.....	**$1,492,500**
Access Control Funded	61170-1790-6005	$50,000
	Returned	($0)
	Total.....	**$50,000**

Grand total of Army funding..... **$ 2,177,225**

***Business Team members (Ruby Rodriguez and Annette Ursini) are funded separately at exactly amount of salary/benefits and 33% MC. Funding occurs in 1261 and 1263 with the 67/33 split.

Wildlife and Habitat Management	Base	61170-1261-0000	$ 537,768
Reduction			$ -1,076
Increase for Rocky Flats			$ 10,000
Business Team (6RBT)		61170-1261-6RBT	$ 148,936
TOTAL……			**$695,628**
Base Maintenance	Base	61170-1262-MAIN	$ 218,227
Reduction			$ - 519
Annual Maintenance		61170-1262-A6RM	$ 41,396

Small Equipment		61170-1262-B6RM	$ 23,600
Dechlorinated project		61170-1262-6B07	$ 452,674
Increase in project			$ 11,939
TOTAL……			**$747,317**
Visitor Services	Base	61170-1263-0000	$ 856,556
Reduction			$ - 1,714
Addition (Rafferty)			$ 39,100
Removal (Rafferty)			$ - 26,280
Business Team (6RBT)		61170-1263-6RBT	$ 73,357
Jr Duck Stamp (6JDK)			$ 3,750
Volunteer (6VOL)			$ 0
Youth			$ 79,480
TOTAL……			$**1,024,249**
Law Enforcement	Base	61170-1264-0000	$ 119,526
Reduction			$- 239
TOTAL……			**$ 119,526**
Jr. Duck Stamp (Migratory Birds)		61170-4524-0000	$ 1,313
Funding from Engineering for POS at Visitor Center Bookstore		2694-E601	$ 6,500
Recycle Funds		61170-4557-0006	$ 10,774
Solar Rebate		61170-4561-0000	$ 116,480
Solar monthly Rebate		61170-4562-0000	$ 909
Contributed Funds FY01 (Land Title Guarantee Co)		61170-7201-0560	$ 2,688
Contributed Funds FY07 (Egli House)		61170-7201-0677	$ 2,280
Contributed Funds FY05 (Commerce City)		61170-7201-6000	$ 15,730
Contributed Funds RMA Wildlife Society-GO Wild		61170-7201-6004	$ 741
Contributed Funds FY07 Bison Fence Shell		61170-7203-6007	$ 4,000
Recreation Fee		61170-8081-0000	$ 6,815

<u>Expenses:</u>

E-Corp	Mezzanines	$119,848
E-Corp	Translucent panels	$ 19,642
Herbicide	chemical	$ 90,836
Helicopter	Agair	$ 82,420
Equipment	Repairs/Maintenance	$ 68,101
Fuel		$ 53,392
Youth Corp	Year One	$ 45,100
Youth Corp	Groundwork Denver	$ 34,380
Seed		$ 44,160
Field Supplies		$ 35,706

Corral material		$ 24,353
Vehicle	Repairs/Maintenance; includes bus wrap	$ 24,196
Uniforms		$ 14,600
Computers		$ 13,253
Office Supplies		$ 11,748
Travel		$ 11,304
Refuge Day (2011)		$ 11,158
Fish for lakes		$ 10,446
Trails material		$ 10,366
Rocky Flats	Texas Aglife	$ 10,000
Safety Items		$ 8,453
EE supplies		$ 7,244
Bunkhouse	material/repairs/furniture	$ 6,966
Janitorial supplies		$ 6,031
VC Supplies		$ 4,695
Movers	from Z80 to VC	$ 4,371
Training		$ 4,297
Signs		$ 4,218
Volunteer		$ 2,698
Bison health		$ 2,479
Postage		$ 880
OPM		$ 835
Physicals		$ 723
Trails day		$ 494
Equipment	24’ enclosed trailer	$ 9,516
Equipment	Bobcat, 3450, UTV	$ 12,141
Equipment	Imprinter	$ 37,770
Equipment	Trimble Units (6)	$ 26,787
Equipment	Compass Software	$ 494
Jr Duck Stamp	1263	$ 3,750
Jr Duck Stamp	Migratory Birds	$ 1,313
Utilities	Dept. of Army	$ 15,376
Waste Mgmt.	VC & Bldg. 120 Recycle	$ 3,843
Cells Phones	Verizon	$ 3,167
Terminex	Bldg. 383, VC, Bunk	$ 2,686
Water	City of Arvada	$ 506
Xcel	2 Ponds	$ 105
Xcel	RMA – bldg. 383	$ 3,107
Xcel	RMA – VC	$ 6,631
Xcel	FY2012—2 Ponds	$ 68
Xcel	FY2012-bldg 383	$ 1,100
Xcel	FY2012-VC	$ 10,000
Cable	Direct TV-bunkhouse	$ 1,088
Port-a-potty	USS – 2 Ponds	$ 961
Port-a-potty	USS-RMA	$ 3,036
Janitors	BPA-new VC	$ 13,115

Janitors	New VC	$ 15,120
Janitors	Bldg. 120, 121, 383	$ 10,848
Copier	CASU	$ 6,133
Copier	New copier	$ 8,813
Copier	Maint. agreement	$ 2,606

B.10. Provision of Installation Maintenance Support in Skilled Trades

B.10.a. Heavy Equipment Operations Support

In FY 2011, the U.S. Army provided funding to cover labor and equipment operation costs for RMA Refuge Operations support to maintain site-wide unpaved roads, including periodic grading to restore acceptable road surface and drainage conditions, snow removal necessary to provide RVO/PMC and Refuge access, and maintenance as needed to remove storm-caused debris and sediment from unpaved roadways. This Army funding also covered snow removal by Refuge Operations during 3 storms around Buildings 120, 121, the parking area of the existing Refuge Visitor Center, the tram route, and Refuge Operations backup for snow removal on RMA paved roads and parking areas assigned to the PMC, as requested by PMC personnel.

FY 2011 Army funding for Refuge Operations support also provided for maintenance projects that were conducted including 70 hours in Section 31 on a restoration project that included removing berms, hills and ditch restoration, and the removal of trees and ripping amendment by the new visitor's center.

B.10.b. Site-wide Communications Support

The Refuge Telecommunications Specialist provided comprehensive voice, data, and two-way radio communications support for all government and contactor organizations, facilities, and personnel located at RMA in FY 2011. This support included operation, maintenance, and management of RMA fiber optic and copper cable plants to support numerous data and voice networks. The Telecommunications Specialist is the U.S. Army Base Communications Contract COR for RMA and works with coordination/compliance in the U.S. Army Communications Directorate at Ft Huachuca, AZ. The Telecommunications Specialist performed all system administration for voice/voice mail required for office moves, personnel departures and new hires for all organizations at RMA.

A brief summary of telecommunications support provided during FY 2011 includes:

- Provided the USFWS L.E. Special Operations Unit with technical assistance in moving from a temporary trailer (Z-83) to a permanent office (Eagle repository), provided new voice and data network connectivity at this location, provided technical assistance with installing equipment to enhance cellular communications within office spaces. A statement of work had to be filed to accomplish this.
- Provided connectivity for the new USFWS Visitor Center, extended fiber and copper cabling connectivity to provide voice and data capabilities. Provided all voice and data support necessary to move Visitor Services personnel into this facility. Transferred equipment from Z-80 to new Visitor center.
- Removed CERCLA Building which was demolished from network and added Building 887 (old SQI), Lime Basin Metering Building and the visitor center gate to the copper network.

- Extended network and phone service to new work area of old Visitor Center (Contact Station) bookstore.
- Provided briefings for U.S. Army Program Manager to facilitate long term telecommunications planning.